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UNION OF SOUTH AFRICA

PRETORIA

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SOUTH AFRICAN ASCOMYCETES

IN THE

NATIONAL HERBARIUM.

By ETHEL M. DOIDGE.

PART II.

51. **Aphysa Rhynchosiae** (Kalch & Cke.) Theiss et Syd.

Ann. Myc. XV (1917), p. 134.

Syn. *Stigmatea Rhynchosiae* Kalch. & Cke.; Syll. Fung. I, p. 543 (on *Rhynchosia gibba*, Inanda, Natal., leg. Wood).

Parodiella Schimperi P. Henn. Bull. Herb. Boiss., I, 1893, p. 118; Syll. Fung. XI, p. 260 (on *Rhynchosia elegans* and *Vigna* sp. Eritrea).

On *Rhynchosia gibba*, Umkomaas, Natal, 25.4.19, Bottomley [11884].

On *Rhynchosia* spp., Durban, 25.5.97, Medley Wood [356]; Durban, 15.6.15, Lansdell [9015]; Kentani, 29.9.15, Pegler (Pegler No. 2357) [9116]; Inanda, Medley Wood [9478]; Kowie, 15.7.19, Doidge [12362]; Howiesons Poort, 12.7.19, Doidge [12381].

On *Dolichos gibbosus*, Van Stadens Pass, 13.11.17, Doidge [10864].

Epiphyllous, forming spots 1–3 mm. diameter, which are made up of numerous minute black points. Each point represents a hemispherical, subcuticular perithecium, 170 μ in diameter and about 60 μ high. Free mycelium wanting. Basal line brown, thin, 0·5 μ thick, lying flat on the outer wall of the epidermis; the outer membrane convex, remaining covered by the cuticle, 6–7 μ thick, parenchymatous, without any decided radial orientation except at the periphery. Asci basal, somewhat converging towards the ostiole, sessile, aparaphysate, somewhat thickened round the apex, 42–48 × 12–15 μ, eight-spored. Spores distichous, ellipsoid, two-celled, not constricted, rounded at both ends, light, grey-brown, 7–10 × 4 μ.

52. **Catacauma Schotiae** n. sp.

On leaves of *Schotia speciosa*: Humewood, Port Elizabeth, 23.3.12, Doidge [2294].

Stromata epiphyllous, scattered, minute, black, convex, 0·3–0·4 mm. diameter, round or oval, unilocular. Loculus developing between the epidermis and the palisade tissue, and with its base resting on the latter which becomes concave, ellipsoid, 300–350 μ diameter, 100–120 μ high in the centre; epidermal clypeus black, opaque, 30–40 μ thick, and covered by thick cuticle which is 15–16 μ thick: the clypeus does not always extend over the whole length of the loculus, being 200–250 μ long, lateral and basal walls of loculus consisting of delicate hyphae which are laterally compressed. Asci paraphysate, oblong or ellipsoid, tapering somewhat to the rounded apex, eight-spored, sessile, 80–87 × 17–20 μ. Spores distichous, hyaline, continuous, ellipsoid, rounded at both ends. 20–24 × 6–7 μ.

Catacauma Schotiae Doidge, nov. sp.

Stromata epiphylla, sparsa, minuta, atra, convexa, subepidermales, 0·3–0·4 mm. diametro unilocularia. Loculli ellipsoidei, 300–350 μ diametro, 100–120 μ alti; clypeo atro, opaco, 30–40 μ crasso. Asci paraphysati, cylindracei v. ellipsoidei, octospori, sessiles, 80–87 × 17–20 μ. Sporae distichae, hyalinae, continuae, ellipticae, utrinque rotundatae, 20–24 × 6–7 μ.

Hab. in foliis *Schotiae speciosae*, Port Elizabeth, 23.3.12, leg. Doidge [2294]

53. **Dictyochorella Andropogonis** n. sp.

On leaves of *Andropogon nardus*, Tugela Valley, near Goodoo, Natal, 16.5.20, Doidge [14104].

Stromata thickly strewn on the leaf surface, small, oval to elliptic, ½–1 mm. long, visible on both surfaces, slightly convex, loculi mostly opening towards the upper leaf surface; often a number of stromata arising close together become confluent and form streaks up to 5 mm. long in which the separate stromata can still be distinguished. Stromata with one or few loculi. Loculi occupying the whole of thickness of leaf, 190–240 μ diameter × 160–190 μ high. Clypeus over apex of loculi black, opaque, about 30 μ thick, extending considerably beyond loculus on each side: basal clypeus 20–25 μ thick; when the loculus does not reach basal clypeus, then the intervening space is filled with brown hyphae; lateral walls (and basal where there is no clypeus) up to 20 μ thick and composed of brown compact angular cells. Stylospores brown, oval, elliptic or pyriform; with a central (?) vacuole, 8–10 × 3–4 μ. Asci paraphysate, cylindrical, rounded at apex, eight-spored, 80–90 × 12–13 μ. Spores distichous or obliquely monostichous, with three or occasionally four transverse septa, constricted at septa, tapering towards rounded at ends, two central cells broader than terminal ones and one or both with a somewhat oblique longitudinal septum, 15–17 × 6–7 μ, fuscous-olivaceous, sometimes only one central cell has a septum and it is then broader than the other.

Dictyochorella Andropogonis Doidge, n. sp.

Stromata dense disposita, minuta, elliptica v. suborbicularia ½–1 mm. longa, in utraque foliorum pagina visibilia. Loculi uni v. pauci in quoque stromate, 190–240 diametro, 160–190 μ alti, clypeo amphigeno atro, opaco, circ. 30 μ crasso. Asci paraphysati, cylindracei, apice rotundati, octospori, 80–90 × 12–13 μ. Sporae distichae v. oblique monstichae, transverse 3-rare, 4-septatate, ad septa constrictae, loculis 1–2 plerumque mediis septo singulo longitudinale divisi, fuscae v. olivaceae, 15–17 × 6–7 μ.

Hab. in foliis *Andropogonis nardi*, Tugela Valley, Natal, 16.5.20, leg. Doidge [14104].

54. **Phaeodothis stenostoma** (Ell. et Tr.) Theiss et Syd.

Ann. Myc. XV (1917), p. 596.

Syn. *Phyllachora stenostoma* Ell. et Tracy, Journ. of Myc., 1890, p. 76; Syll. Fung. IX, p. 1029.

On *Panicum maximum*, Bluff, Durban, 7.7.11, Doidge [1611].

Stromata oval, about 600 μ long, 300–400 μ broad, or subcircular ⅓–1 mm. diameter, very irregular in outline, usually visible on both sides of the leaf, often only on one side and surrounded by a small, pale ring, later forming elliptic groups ½–1 cm. long and ½ cm. broad. A dark epidermal clypeus is developed in both leaf surfaces. Loculi, flattened-spherical, often irregular in shape, mostly 170 μ diameter, 120–130 μ high, locular wall composed of delicate, light brown hyphae, fusing at the apex with the clypeus, 12–14 μ thick. Asci cylindrical, parietal, paraphysate, briefly pedicellate, 52–60 × 7–8 μ. Spores obliquely monostichous or subdistichous, oblong, club-shaped, fuscous, rounded at both ends, straight, 12–14 × 4–4½ μ, somewhat constricted at the septum.

55. **Phaeodothis Tristachyae** Syd.

Ann. Myc. X (1912), p. 41.

On leaves of *Tristachya leucothrix*, Mooi River, Natal, 15.4.11, Burtt-Davy [1470].

Stromata amphigenous, scattered or in short series, oblong or linear, ½–1 mm. long, flat, black, opaque; loculi numerous, minute, 100–150 μ diameter. Asci cylindrical, somewhat obtuse at the apex, 45–70 × 6–12 μ, eight-spored. Paraphyses numerous, filiform. Spores monostichous or distichous, fusiform, 1-septate, loculi equal, not or very slightly constricted, olivaceous-brown, 12–13½ × 3–4 μ, each cell 1–2 guttulate.

56. **Phyllachora Crotonis** (Cke.) Sacc.

Syll. Fung. II, p. 599; Ann. Myc. XV (1917), p. 523.

Syn. *Dothidea Crotonis* Cke., Grevillea X, p. 129.

Phyllachora crotonicola Rehm., Hedwigia XXIX, 1890, p. 110; Syll. Fung. IX, p. 601.

Phyllachora Julocrotonis Bres., Hedwigia, XXXV, 1896, p. 300; Syll. Fung. XIV, p. 668.

On leaves of *Croton sylvaticum*, Inanda, Natal, January, 1881, Medley Wood (Wood No. 406) [9489].

Stromata visible on both sides of the leaf, ⅛–½ mm. diameter, round, convex on both surfaces, on the upper surface smooth, shiny, often becoming more or less coalescent, and then up to 1 mm. in diameter and more or less irregular in outline. Single stromata unilocular, scattered irregularly over leaf surface. Loculi with an upper and lower epidermal clypeus which is no broader than the loculus. The lateral walls are not so well developed and are light brown. Loculi 200–300 μ diameter, spherical. Asci cylindrical to somewhat club-shaped, paraphysate, briefly pedicellate, 60–70 × 10–14 μ. Spores distichous, one-celled colourless, ellipsoid, rounded at both ends, 14–16 × 7–9 μ.

57. **Phyllachora Cynodontis** (Sacc.) Niessl.

Not. Pyren., p. 54; Syll. Fung. II, p. 602; Ann. Myc. XV (1917), p. 447.

Syn. *Physalospora Cynodontis* Del., Bull. Soc. Myc. Fr., 1890, p. 183; Syll. Fung. IX, p. 599.

Phyllachora graminis var. *Cynodontis*, Sacc. Rabh. F. Eur., 2441.

On *Cynodon dactylon*, Pretoria, 12.7.03, Burtt-Davy [145 and 170]; Groenkloof, Pretoria, 3.5.10, Burtt-Davy [917]; Cedara, Natal, 18.1.11, Fisher [1172]; Vereeniging, 8.6.10, Burtt-Davy [935]; Bloemfontein, 6.4.17, Potts [11311].

On *Cynodon incompletus*, Pretoria, 19.5.06, Pole Evans [17]; 19.6.11 [1587].

Stromata round-angular, scattered, 0·3–0·5 mm. diameter, sometimes coalescing, slightly convex, black. Clypeus epidermal, opaque, only on upper side of the stroma, and usually epiphyllous; on both sides of the leaf, but then the basal clypeus is shorter and not so well developed. Loculi small, spherical, 160–180 μ diameter, usually not penetrating right through the leaf, with a thin delicate wall, scattered or in small groups. Asci paraphysate, cylindrical, club-shaped, pedicellate, 50–60 × 12–15 μ. Spores hyaline, monostichous or distichous, oval-ellipsoid, 10–12 × 5½–6 μ.

58. **Phyllachora Evansii** Syd.

Ann. Myc. X (1912), p. 40; XIII (1915), p. 459.

On *Setaria sulcata*, Barberton, March, 1911, Pole Evans [1280]; Durban, 21.3.19, Bottomley [12231]; Isipingo, Natal, 27.3.18, Bottomley [11659].

On *Setaria nigrirostris*, Vereeniging, Transvaal, 26.2.17, Burtt-Davy [10021].

On *Setaria aurea*, Barberton, 20.1.12, Doidge [2012]; Garstfontein, Pretoria District, 26 3.11, Pienaar [1265].

Stromata visible on both sides of the leaf, scattered or in rows, on yellowish leaf spots, ellipsoid, ½–1 × ⅓–½ mm., dull black; clypeus in both upper and lower epidermis, 20 μ thick, opaque. Loculi few, ellipsoid, 100–150 μ high, 260–230 μ diameter, with thinner, delicate, brown lateral walls. Asci cylindrical, club-shaped, 70–120 × 8–12 μ; paraphysis numerous. Spores mono- or distichous, ellipsoid to oblong, rounded at both ends, straight, colourless, 14–18 × 6–8 μ. Conidia filiform or sickle-shaped, 15·25 × 1 μ.

59. **Phyllachora lucens** (Cke.) Sacc.

Syll. Fung. II, p. 600; Ann. Myc. XV (1917), p. 562.

Syn. *Dothidea lucens* Cke., Grevillea X, p. 128.

On leaves, Inanda, Natal, 1881, Medley Wood (Wood No. 581) [9487 and 10443].

Stromata unilocular, punctiform, only visible on the upper leaf surface, convex, black, shining, thickly crowded on yellow leaf spots, 6–10 mm. in diameter. Loculi flattened spherical, 220–260 μ diameter, 130–160 μ high; the base does not reach as far as the lower epidermis: the locular wall is 8–10 μ thick, consisting of brown cells, but weakly developed, and here and there not very distinct: at the apex it unites with the short black epidermal clypeus. Asci cylindrical, paraphysate, eight-spored, briefly pedicellate, 60–70 × 8–12 μ. Spores distichous or obliquely monostichous, oblong, colourless, one-celled, straight, with blunt ends, 13–15 × 4½–5½ μ.

60. **Phyllachora Penniseti** Syd.

Ann. Myc. XIII (1915), p. 39 (on leaves *Pennisetum Benthami*, Congo).

On leaves of *Pennisetum sphacelatum*, Tugela Valley, near Goodoo, Natal, 16.5.20, Doidge [14102].

Stromata conspicuous on both leaf surfaces, scattered or crowded and arranged in rows, round or oblong, ½–1 mm. long, or forming larger stromata by confluence, black, opaque, plurlocular. Loculi irregular, large, 280–400 μ long, 200–300 μ high. Clypeus in both upper and lower epidermis, 15–25 μ thick, lateral wall of loculus 8–10 μ broad, brown: stylospores straight or flexuous, continuous, filiform, hyaline, 18–35 × 1 μ. Asci clavate, rounded at the apex, 70–95 × 20–26 μ, eight-spored, paraphysate; spores distichous or obliquely monostichous, broadly rounded at both ends, continuous, hyaline, 17–24 × 11–18 μ.

61. **Phyllachora heterospora** P. Henn.

Syll. Fung. XXII, p. 425; Ann. Myc. XV (1917), p. 453.

On leaves of *Panicum maximum*, Bluff, Durban, 7.7.11, Doidge [1611]; Kentani, 1.5.14, Pegler [7773]; Kentani, May, 1915, Pegler (Pegler No. 1953) [9095].

On *Panicum* sp., Barberton, 22.8.12, V. d. Bijl [5137].

Both leaf surfaces are comparatively thickly beset with stromata, which are round or elliptic, ⅓–1 mm. diameter, convex, somewhat shiny, not usually coalescing, and not situated on discoloured leaf areas, the whole leaf becomes yellow. Clypeus epidermal, 20 μ thick, on one or both leaf surfaces. Loculi about 4–10 in each stroma; when the stroma is only on one side of the leaf, occupying about two-thirds of its thickness, closely crowded, 180–230 μ diameter, 160 μ high. When two stromata occur at the same point on opposite sides of the leaf the loculi only reach the centre. Wall brown, about 10 μ thick. Asci cylindrical, paraphysate, 60–80 × 10–16 μ, eight-spored; spores mostly distichous, ellipsoid, tapering somewhat to both ends but rounded, one-celled, hyaline, 13–17 × 7–8 μ.

62. **Phyllachora Tecleae** n. sp.

On leaves of *Teclea natalensis*, 5.6.15, Kentani, Pegler (Pegler No. 2324) [9079].

Stromata in small groups on yellow leaf spots, developing on both sides of the leaf, with a preference for the upper surface, visible on both leaf surfaces, oval, ellipsoid or almost round, 0·5 to 2·5 mm. long, black, somewhat shiny, raised on both surfaces, but not

convex, groups of stromata are often oval or elliptic in outline between the lateral veins. The normal thickness of the leaf is about 240 μ, the thickness of the stroma is 300–400 μ. Loculi occupying the whole thickness of the leaf, flattened spherical, 300–400 μ diameter; epidermal clypeus on both leaf surfaces very thick, black, opaque, on the upper surface 40–50 μ thick; basal clypeus thinner, 23–25 μ; lateral wall consisting of thin, delicate, laterally compressed hyphae; leaf tissue between the loculi permeated in every direction by brown hyphal threads. Asci richly paraphysate, cylindrical, eight-spored, with a short foot, 80–90 × 10–13 μ. Spores obliquely monostichous, one-celled, hyaline, ellipsoid or subfusoid, tapering to each end, but rounded not pointed at ends, 13-17 × 5-6 μ.

Phyllachora Tecleae Doidge, nov. sp.

Stromata amphigena plerumque epiphylla, maculis flavidulis insidentia, elliptica v. suborbicularia, 0·5–2·5 mm. diametro atra, parum nitidula. Loculi suborbiculares, 300–400 μ diametro, clypeo epidermale amphigeno, atro, opaco, 40–50 μ crasso. Asci copiose paraphysati, cylindracei, octospori, 80–90 × 10–13 μ. Sporae oblique monostichae, continuae, hyalinae, ellipsoidae v. sub-fusoidae, utrinque attenuatae sed rotundatae, 13–17 × 5–6·5 μ.

Hab. in foliis *Tecleae natalensis*, Kentani, 5.6.15, leg. Pegler [9079].

63. **Phyllachora Tricholaenae** P. Henn.

Engl. Bot. Jahrb. XXIII, p. 541; Syll. Fung. XIV, p. 672; Ann. Myc. XV (1917), p. 461.

On leaves of *Tricholaena rosea*, Winklespruit, Natal, 14.2.13, Pole Evans [5641].

Stromata oval, black, shining, slightly convex, scattered or crowded, ½–1 mm. long, clypeus formed in epidermis of both leaf surfaces, but is more extensive on the side of the apex of the loculus than on the basal side. Loculi delimited at base and apex by the opaque clypeus, lateral walls thinner and more delicate. Loculi spherical, about 240 μ diameter; asci club-shaped, pedicellate, 55–60 × 15–18 μ, paraphysate. Spores distichous, elliptic, abruptly rounded at ends, 12–13 × 7–8 μ.

64. **Telimena Arundinariae** n. sp.

On leaves of *Arundinaria tesselata*, Goodoo Bush, Natal, 20.5.20, Doidge [14103.]

Stromata on yellow leaf spots, scattered or more rarely in groups, minute, oval to ellipsoid, 0·5–0·7 mm. long, dull black, convex on upper leaf surface, penetrating through leaf and becoming visible as minute, dull-black specks on the lower surface. Loculi usually one, sometimes two in each stroma, 120–180 μ diameter, 100–120 μ high, occupying from three-quarters to whole of thickness of leaf, with a dark epidermal clypeus on the upper side, 15–20 μ thick; when the loculus occupies whole thickness of leaf there is also a clypeus developed in the lower epidermis; remainder of locular wall composed of delicate, laterally compressed hyphae. Asci cylindrical, paraphysate, rounded at apex, eight-spored, briefly stipitate, 100–120 × 15–18·5 μ.

Spores obliquely monostichous or distichous, cylindrical, fusiform, tapering somewhat to both ends, four-celled, cells subequal in length, or middle cells somewhat larger than the terminal ones, hyaline or subhyaline, 27–33 × 8–9·5 μ.

Telimena Arundinariae Doidge, nov. sp.

Stromata epiphylla, maculis flavidulis insidentia, sparsa v. gregaria, minuta, elliptica, atra, 0·5–0·7 mm. longa, loculos 1–2 includentia, in hypophylla etiam conspicua. Loculi 120–180 μ diametro, 100–120 μ alti, clypeo epiphyllo v. amphigeno, atro, 15–20 μ crasso. Asci cylindracei, paraphysati, apice rotundati, octospori, breviter pedicellati, 100–120 × 15–18·5 μ. Sporae oblique monostichae v. distichae, cylindraceae v. fusiformae, parum utrinque attenuatae, 3-septatae, hyalinae v. sub-hyalinae, 27–33 × 8–8·5 μ.

Hab. in foliis *Arundinariae tesselatae*, Natal, 20.5.20, leg. Doidge [14103].

65. **Telimena corticicola** n. sp.

On woody stems of *Helichrysum* sp., Alice, C.P., 18.11.17, Doidge [10975].

Stromata scattered irregularly on the greyish bark, minute, dull black, oval to narrow ellipsoid, 0·5 to 0·8 mm. long, somewhat convex, unilocular, or with few loculi sunken in the cortex, not erumpent. Loculi oval to flattened spherical, opening by an apical pore, 300–340 μ diameter, 200–240 μ high, fusing at the apex with the black, opaque, clypeus which is 18–20 μ thick and extends beyond the apex of the loculus a distance of 300–400 μ. The space between the clypeus and the upper part of the loculus is filled with a black opaque hyphal weft similar to that forming the clypeus, and from this a few dark hyphae run out into the substratum. The lower part of the locular wall consists of delicate, almost colourless hyphae, which are strongly compressed laterally. Asci paraphysate, cylindrical, rounded at the apex, very briefly pedicellate, 80–110 × 20–23 μ, rather thick walled. Spores distichous, colourless, cylindrical, rounded at both ends, four-celled, primary cross-wall in the centre, each of two primary cells being later divided in the centre by a secondary wall. Thick walled, wall about 2 μ thick, outer edge smooth, inner curving inward to meet transverse walls and giving the spore the appearance of being constricted, 24–27 × 10–13 μ.

Telimena corticicola Doidge, nov. sp.

Stromata sparsa, corticicola, atra, elliptica, 0·5–0·8 mm. longa, leniter convexa, loculos paucos includentia. Loculi ovati v. suborbiculares, 300–400 μ diametro, 200–240 μ alti, clypeo opaco, 18–20 μ crasso. Asci paraphysati, cylindracei, apice rotundatae, brevissime pedicellati, 80–110 × 20–23 μ. Sporae distichae, hyalinae, cylindraceae, utrinque rotundatae, 3-septatae, 24–27 × 10–13 μ.

Hab. in corticis *Helichrysi* sp., Alice, C.P., 18.11.17, leg. Doidge [10975].

66 **Systremma Pterocarpi** n. sp.

On leaves and twigs of *Pterocarpus ceriseus*, Khami Ruins, Rhodesia, 14.7.20, Bottomley [14101].

Leaf stromata epiphyllous, rarely hypophyllous, scattered, situated on yellowish leaf spots, dull black, round or ellipsoid, 1–1·5 mm. diameter, 450–600 μ high, usually with a concentric zone of secondary stromata with a radius of about 1 mm. from centre of primary stroma. Stromata on twigs and midribs of leaves similar, but usually oval to ellipsoid, somewhat larger and without secondary stromata.

The stromata arise between the epidermis and the palisade cells, the cuticle becomes arched, and a dark-brown epidermal clypeus is formed. The base is also composed of small dark cells, and rests on the palisade cells, but the central part of the stroma is formed of paler, more delicate tissue in which are produced one large and a number of smaller conidial loculi more or less spherical but irregular in size. The conidia are round, oval, pyriform, somewhat angular, brown, and 5–7 μ diameter. The conidial stroma attains a height of 150–250 μ, and does not rupture the cuticle. The ascostroma arises from beneath the conidial stroma, and is similar to it in structure, the latter is pushed up and the cuticle ruptured, its dark base forming the covering layer of the ascostroma. Loculi few, spherical to ellipsoid, or pyriform, 120–200 μ diameter. Asci numerous aparaphysate, eight-spored, thin-walled, evanescent, oblong-cylindrical, about 70 × 10 μ. Spores mono-half distichous, two-celled, brown, cylindrical, with blunt ends, slightly constricted, 10–13·3 × 5–6·3 μ, upper loculus 6–8·6 μ, lower 3·3–5 μ long.

Systremma Pterocarpi Doidge, nov. sp.

Stromata epiphylla, rarius hypophylla, maculis flavidulis insidentia, atra, orbicularia v. elliptica, 1–1·5 mm. diametro, 450–600 μ alta, subepidermalia. Loculi pauci, orbiculares, elliptici v. pyriformi, 120–200 μ diametro. Asci numerosi, aparaphysati, octospori, oblongi v. cylindracei, 70 × 10 μ. Sporae monostichae v. subdistichae, 1-septatae, brunneae, cylindracei, utrinque subtruncatae, leniter constrictae, 10–13·3 × 5–6·3 μ; loculo supero majore 6–8·6 μ longo, infero 3·3–5 μ longo.

Hab. in foliis caulisque *Pterocarpi cerisei*, Khami Ruins, Rhodesia, 14.7.20, leg. Bottomley [14101].

67. **Teratosphaeria fibrillosa** Syd.

Ann. Myc. X (1912), p. 39; XV (1917), p. 631.

On leaves of *Protea grandiflora*, Bains Kloof, near Wellington, 26.2.11, Doidge [1217]; 21.2.12, Doidge [2059]; 5.4.12, Stoneman [2232].

Loculi ellipsoid or pyriform, perithecium-like, 150–220 μ diameter, sunken under the epidermis, arranged in centrifugal, irregularly branched, radiating lines, to a diameter of 1 cm. Locular wall consisting of concentric laters of delicate stromatic hyphae. Apex of loculus penetrating the epidermis but not protruding. No true ostiole. Vegetative stroma meagre, penetrating into the intercellular spaces of the mesophyll below the epidermis in the form of perpendicular hyphal strands. At the apex the hyphae also penetrate the adjacent epidermal cells, but without forming a clypeus. Asci basal, quite sessile, club-shaped, thickened round apex, 70–110 × 25–35 μ, aparaphysate, eight-spored. Spores distichous or tristichous cylindrical, straight, medially slightly constricted at the septum, light-brown, rounded at both ends, 42–52 × 8–9 μ.

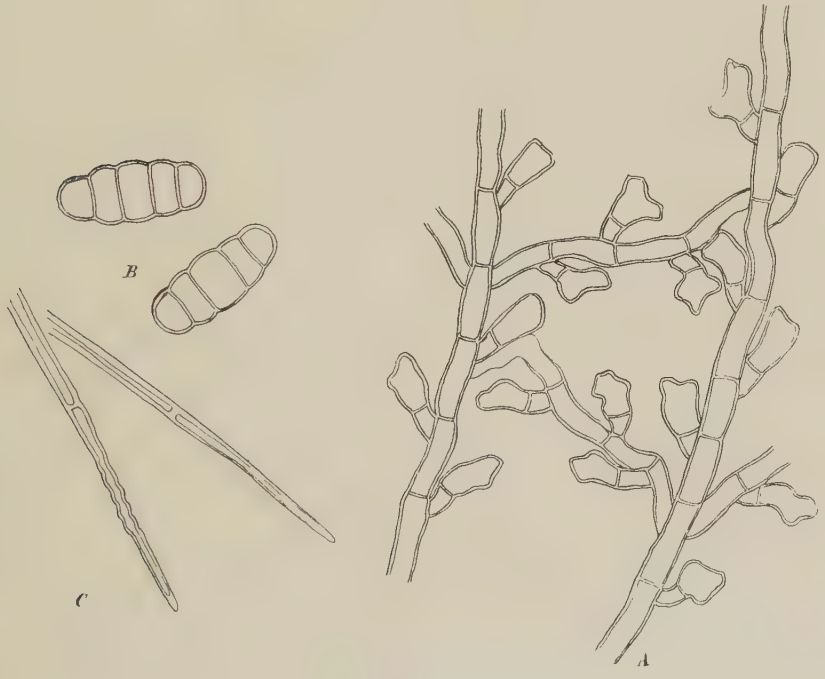

Fig. 1

68. **Meliola capensis** (K. & Cke.) Th.

Ann. Myc. X (1912), p. 19; Trans. Roy. Soc. S. Afr., V, p. 731.

Syn. *Asterina capensis* K. & Cke., Grevillea 9, p. 32.

This fungus occurs commonly on *Hippobromus alatus*. Its mycelial setae were described as being straight, simple, opaque, 300–400 × 5–10 μ, pellucid near the acute apex. Examination of a large number of collections shows that in the majority at least 50 per cent. of the setae are forked at the apex. The apex of the setae should therefore be described as simple, acuminate, or with two to three acute teeth. [Fig. 2.]

69. **Meliola Carissae** n. sp.

Amphigenous, forming irregular spots 5–6 mm. diameter or larger areas by confluence. Mycelium forming an irregular network, branches opposite, anastomosing. Hyphae slightly undulate, 6–7 μ thick, not infrequently constricted at septa, cells 20–30 μ long; capitate hyphopodia alternate, 20–30 × 10–13 μ, terminal cell variable in form, sometimes club-shaped or sublobed, but most frequently truncate. Mucronate hyphopodia not very numerous, unilateral or alternate, with a short thick neck, 18–20 × 6–7 μ. Mycelial setae fairly numerous, simple, straight, 550–700 μ long, 9–10 μ thick at base, and tapering very gradually to the blunt apex, black and opaque at base, but becoming brown and slightly translucent near apex. Perithecia not very numerous, 180–200 μ diameter, spherical, black, surface cells slightly convex. Asci two-spored, evanescent, spores four-septate, oblong, slightly constricted, rounded at both ends, brown, 43–47 × 16·5–20 μ. [Fig. 1.]

On leaves of *Carissa arduina*, Pirie Forest, Kingwilliamstown, 8.7.19, Doidge [12296]; Van Stadens, C.P., 13.11.17, Doidge [10870]; Bathurst, C.P., 14.7.19, Doidge [12341]; Kowie, C.P., 15.7.19, Doidge [12361].

Meliola Carissae Doidge, nov. sp.

Amphigena, maculas irregulares, 5–6 mm. diametro formans; hyphis subundulatis, 6–7 μ crassis, nonnunquam ad septa constrictis, cellulis, 20–30 μ long, ramis oppositis, anastomosantibus; hyphopodiis capitatis alternis, 20–30 × 10–13 μ, cellula superiore

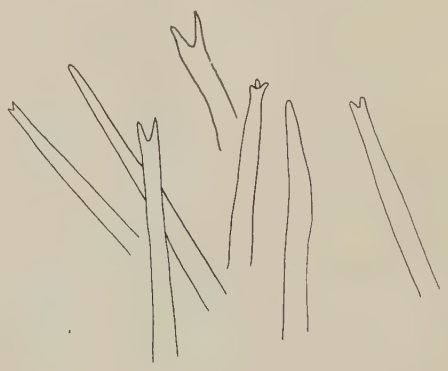

Fig. 2.

variabile, aut clavata v. sublobata aut truncata; hyphopodiis mucronatis paucis, unilateralibus v. alternis, 18–20 × 6–7 μ; setis mycelicis satis numerosis, rectis, simplicibus, 550–700 μ longi, basi opaco, 9–10 μ crassis, apice obtuse sensim attenuatis; peritheciis 180–200 μ diametro, ascis bisporis; sporis 4-septatis, oblongis, leniter constrictis, utrinque rotundatis, brunneis, 43–47 × 16·5–20 μ.

Hab. in foliis *Carissae arduinae*, Pirie Forest, 8.7.19, leg. Doidge [12296].

70. **Meliola dracoenicola** Pat. et Har.

Bull. Soc. Myc. Fr. XXIV (1908), p. 14, Sacc.; Syll. Fung. XXII, p. 56.

On leaves of *Behnia reticulata*, Louis Trichardt, 8.5.19, Putterill [11848].

This fungus was originally described from the Congo on *Dracoena* sp.; it has not been previously recorded from South Africa.

Amphigenous, black, forming spots 2–5 mm. diameter, easily detachable from the leaf surface. Hyphae brown, straight, 7–9 μ thick; cells 17–20 μ long.; branches opposite, numerous, anastomosing; capitate hyphopodia alternate or unilateral, stipitate, 17–20 × 10–13 μ, stipe cell short, cylindrical, 5–7 μ long, head cell globular; mucronate hyphopodia numerous, alternate or opposite, interspersed with the capitate hyphopodia, pyriform or

ampulliform with a straight or curved neck, 15–20 × 6–7 μ. Mycelial setae very numerous, erect, abruptly geniculate at the base or taking a broad curve upwards, opaque, 250–350 μ long, 10–11·5 μ thick, dividing near the apex into two or three short spreading branches, 10–17 μ long, each of these being divided at the apex into two or three small tapering branches, 6–10 μ long, occasionally the latter are themselves bidentate. Perithecia not numerous, black, carbonaceous, globose, 250–300 μ diameter. Spores straight, brown, cylindrical, four-septate, constricted obtuse, 43–46 × 16 μ. [Fig. 3.]

71. **Meliola oleicola** n. sp.

Sub. *M. amphitricha*, Proc. Roy. Soc., South Africa, V, p. 733.

Amphigenous, forming round, dull-black spots, 2–4 mm. diameter, or greater areas by confluence. Mycelium olivaceous, very freely branched and interwoven; branches

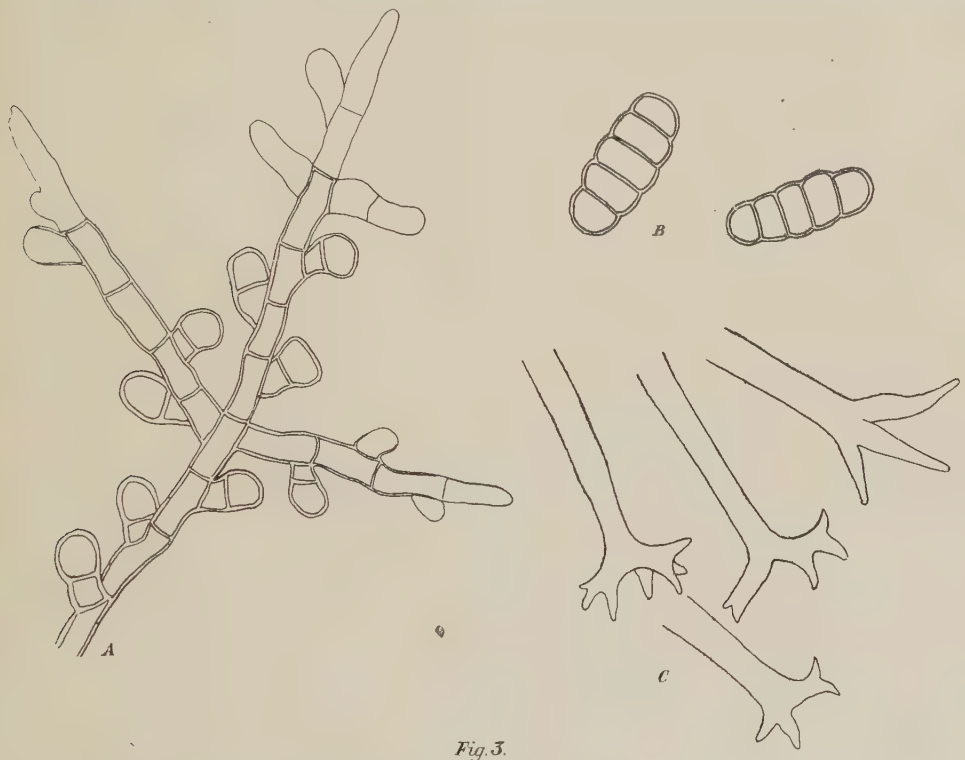

Fig. 3.

opposite, anastomosing; capitate hyphopodia alternate, stipitate, 26–30 μ long, terminal cell ovate or club-shaped, straight or somewhat curved, 18–20 × 10 μ, stipe cell short, closely appressed to or forming an acute angle with the branch. Mucronate hyphopodia on separate branches, opposite, alternate or unilateral, slender ampulliform, base not much wider than curved neck, 20–23 × 6–7 μ. Mycelial setae rather numerous, scattered, simple, straight or slightly flexuous, 240–300 μ long, 9–10 μ thick at base, opaque up to acute apex. Perithecia not very numerous, globose, 220–250 μ diameter, verrucose: surface cells convex. Asci two to four spored, early evanescent. Spores oblong, four-septate, very slightly constricted, broadly rounded at both ends, chestnut-brown when mature, 45–50 × 20–23 μ. [Fig. 4.]

On leaves of *Olea laurifolia*, Buccleuch, Natal, 17.7.18, Doidge [11557]; Lemana, Zoutpansberg District, 7.8.11, Doidge [1835]; Tabankulu, Pondoland, 4.4.15 [9103]; Woodville Forest, George, 11.11.17, Doidge [10937].

On *Olea Pegleri*, Kentani, 29.8.14, Pegler (Pegler 1948) [8382–8785].
On *Oleaceae* (?), Woodbush, Zoutpansberg District, 4.8.11, Doidge [1767].

Meliola oleicola Doidge, nov. sp.

Amphigena, maculas atras orbiculares 2–4 mm. diametro formans. Mycelium ramosum, intertextum, ramis oppositis anastomosantibus, hyphopodiis capitatis alternis, stipitatis, 26–30 μ long, cellula superiore ovata v. clavata, recta v. leniter curvata, 18–20 × 10 μ; cellula inferiore breve, hyphopodiis mucronatis oppositis, alternis v. unilateralibus, ampullaceis, 20–23 × 6–7 μ; setis mycelicis satis numerosis, sparsis, opacis, rectis v. leniter flexuosis, simplicibus, 240–?00 μ long, basi 9–10 μ crassis, apice acutis. Perithecia globosa, 222–250 μ diametro, verrucosa. Asci 2–4 spori, mox evanescentes. Sporae oblongae 4–septatae, leniter constrictae, utrinque rotundatae, 45–50 × 20–23 μ.

Hab. in foliis *Oleae laurifoliae*, Buccleuch, Natal, 17.7.18, leg. Doidge [11557].

Fig. 4

72. **Meliola Panici** Earle.

Muhlenbergia, 1901, p. 12, Sacc.; Syll. Fung. XVII, p. 550.

On leaves of *Stipa dregeana* var. *elongata*, Langholm Estates, Bathurst District, 14.7.19, Doidge [12358].

The type specimen was collected in Porto Rico, and this species has not previously been recorded from South Africa. The original description is as follows :—

Forming minute spots 1–3 mm. diameter, which often become confluent. Hyphae 6–8 μ thick, sparingly branched. Capitate hyphopodia usually alternate and forming a broad angle with the hyphae, 16–20 × 6–8 μ, terminal cell broader than long, irregular, usually three to four lobed. Mucronate hyphopodia numerous, opposite, inserted at right angles, broadly ampulliform, paler, 12 μ long. Mycelial setae numerous, straight, simple, obtuse, obscurely septate, opaque, 400–600 × 8–10 μ, tapering gradually towards the apex. Perithecia scattered, black, three to four spored, evanescent. Spores cylindrical, compressed, four-septate, slightly constricted, rounded at both ends, 40 × 12 × 8 μ.

The South African specimen differs slightly from the above description in that the mycelium is rather dense and copiously branched and anastomosing; the cells of the hyphae are rather short, 13–16 μ long. [Fig. 5.]

73. **Irene Zeyheri** n. sp.

Amphigenous, forming thin black spots 2–4 mm. diameter, or larger areas by confluence; mycelium not dense, forming an irregular network; branches opposite or irregular, anastomosing. Hyphae straight or somewhat sinuous, 6–6·5 μ thick; cells 20–30 μ long; capitate hyphopodia alternate, 18–23 μ long, terminal cell very variable in form, lobed in various ways, 6–14 μ broad at apex; mucronate hyphopodia opposite or unilateral, interspersed with the capitate hyphopodia; ampulliform 16–20 × 6–7 μ. Mycelial setae none. Perithecia scattered, spherical, black, carbonaceous, 190–220 μ diameter, surface cells convex. Asci two-spored, evanescent, spores oblong, brown, four-septate, slightly constricted, rounded at both ends, 39–44 × 16–18 μ.

Fig. 5

On leaves of *Eugenia Zeyheri*, Howiesons Poort, 12.7.17, Doidge [12388]; Pirie Forest, 8.7.19, Doidge [12272]; Van Stadens Pass, 13.11.17, Doidge [10878].

Irene Zeyheri Doidge, n. sp.

Amphigena, maculas, tenues, atras formans. Mycelium effusum, hyphis rectis v. leniter sinuosis, 6–6·5 μ crassis, ramis oppositis v. irregularibus, anastomosantibus; hyphopodiis capitatis alternis, 18–23 μ longis, cellula superiore varia, lobata, apice 6–14 μ lata; hyphopodiis mucronatis oppositis v. unilateralibus, ampullaceis 16–20 × 6–7 μ; setis mycelicis nullis. Perithecia sparsa, globosa, atra, 190–220 μ diametro. Asci bispori. Sporae oblongae, brunneae, 4-septatae, leniter constrictae, utrinque rotundatae, 39–44 × 16–18 μ.

74. **Calothyrium Psychotriae** n. sp.

Hypophyllous, forming thin, rusty-brown patches 10–12 mm. diameter Mycelium fuscous, branching and anastomosing irregularly, hyphae about 5 μ thick, without hyphopodia. Thyriothecia in groups, very pale, flattened hemispherical, or irregular in shape on account of lateral pressure of adjacent thyriothecia, 400–430 μ diameter; composed of radiating hyphae 4–5 μ thick, margin entire, but more or less undulate. Asci fairly numerous, paraphysate, eight-spored, spherical or somewhat pyriform, 50–53 μ diameter, or 60–64 × 30 μ. Spores conglobate, hyaline thick-walled, two-celled, slightly constricted, oblong, rounded at both ends, cells subequal, 26–29 × 11·5–13 μ.

On leaves of *Psychotria capensis* (same leaves as *Meliola amphitricha*), 10.7.11, Amanzimtoti, Natal, Doidge [1575].

Calothyrium Psychotriae Doidge, nov. sp.

Hypophyllis, maculas tenues, 10–12 mm. diametro formans. Mycelium fuscum, ramosum, hyphis circ. 5 μ crassis, hyphopodiis nullis. Thyriothecia gregaria rotundata v.

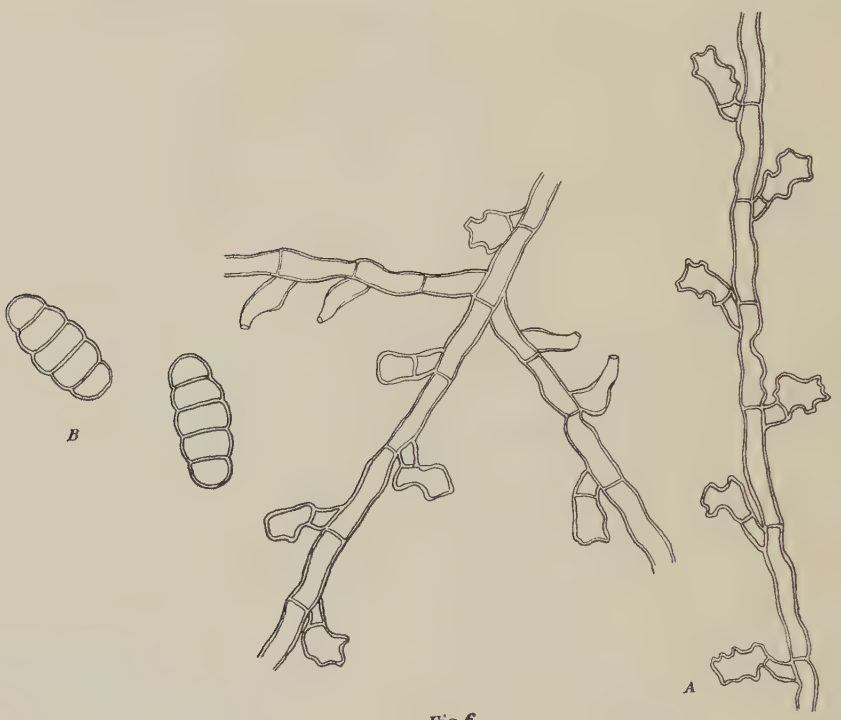

Fig. 6.

mutua pressione angulata v. compressa, 400–430 μ diametro, radiatim ex hyphis 4–5 μ crassis contexta, ad ambitum haud fimbriata. Asci paraphysati, octospori, globosi v. subpyriformi, 50–53 μ diametro vel 60–64 × 30 μ. Sporae conglobatae, hyalinae, 1-septatae, leniter constrictae, oblongae, utrinque rotundatae, 26–29 × 11·5–13 μ.

Hab. in foliis *Psychotriae capensis*, Amanzimtoti, Natal, 10.7.11, leg. Doidge [1575].

75. **Asterina rotonicola** n. sp.

On leaves of *Croton rivularis*, East London, 19.7.19, Doidge [12427]; Langholm Estates, Bathurst, 14.7.19, Doidge [12355].

Epiphyllous, forming thin black, carbonaceous spots, 2–3 mm. diameter. Mycelium pale fuscous, not dense, branching and anastomosing irregularly. Hyphae undulating, 3–3·5 μ thick. Cells 18–25 μ long. Hyphopodia unilateral or alternate, minute, continuous,

pyriform, 6–7 μ high × 3·5 μ. Thyriothecia rather numerous, scattered, flattened hemispherical, 120–140 μ diameter, formed of radiating hyphae about 3 μ diameter, margin not fimbriate, dehiscing by a stellate fissure, no basal membrance. Asci aparaphysate, eight-spored, subspherical or ovate, sessile, 36–40 × 23–33 μ. Spores conglobate, two-celled, brown, slightly constricted, cells subequal, epispore rough at maturity, 17–20 × 10 μ. Pycnidia similar in form to thyriothecia, but somewhat smaller, about 100 μ diameter; conidia ovate, brown, continuous, without a hyaline band, 17–20 × 12–13 μ.

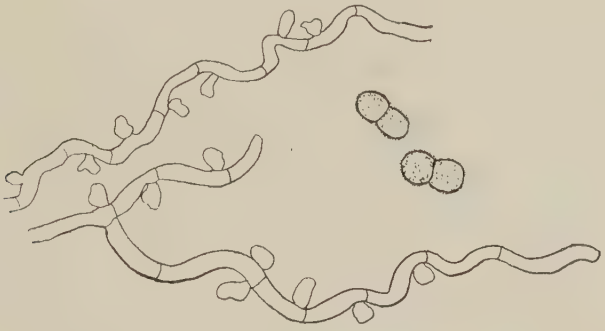

Fig. 7

Asterina crotonicola Doidge, nov. sp.

Epiphylla, maculas tenues atras, 2–3 mm. diametro formans. Mycelium fuscum ramosum, hyphis undulatis 3–3·5 μ crassis, cellulis 18–25 μ longis; hyphopodiis unilateralibus v. alternis, minutis, continuis, pyriformis, 6–7 μ altis, 2·5 μ latis. Thyriothecia satis numerosa, sparsa, orbicularia, 120–140 μ diametro, radiatim ex hyphis circ. 3 μ crassis contexta, stellatim dehiscentia ad ambitum haud fimbriata. Asci aparaphysati, octospori, subglobosi v. ovati, sessiles, 36–40 × 23–33 μ. Sporae conglobatae, 1-septatae, brunneae, in maturitate verrucosae, 17–20 × 10 μ. [Fig. 7.]

Hab. in foliis *Crotonis rivularis*, East London, 19.7.19, leg. Doidge [12427].

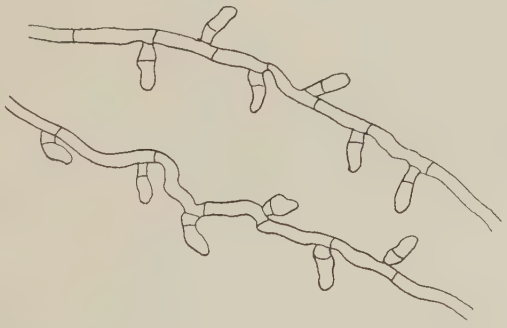

Fig. 8

76. **Asterina Scolopiae** n. sp.

On leaves of *Scolopia Zeyheri*, East London, 19.7.19, Doidge [12414].

On *Scolopia* sp., Mossel Bay, 22.7.15, Pole Evans [9067].

Hypophyllous, forming very thin spots about 5 mm. diameter. Mycelium delicate, diffuse. Hyphae straight or somewhat undulate, branching and anastomosing irregularly, 3-3·3 μ thick; hyphopodia unilateral or alternate, briefly stipitate, often at right angles to hypha, cylindrical, straight or slightly curved, 10–13·3 × 3–3·5 μ. Thyriothecia scattered,

flattened-hemispherical, 150–170 μ diameter, composed of radiating hyphae about 3 μ thick; at margin a number of these continue to extend towards and anastomose with vegetative hyphae, dehiscing by a stellate fissure. No basal membrane. Asci subspherical aparaphysate, eight-spored, sessile, 33–40 μ diameter. Spores conglobate, two-celled, slightly constricted, ellipsoid, cells subequal, 20–23·5 × 9–11 μ. Pycnidia similar in form to thyriothecia, but smaller, 80–90 μ diameter. Conidia brown, continuous without a hyaline band, angular kite-shaped, 18–25 × 10–13·5 μ. [Fig. 8.]

Asterina Scolopiae Doidge, nov. sp.

Hypophylla, maculas tenues, circ. 5 mm. latas, formans. Mycelium laxum, hyphis rectis v. subundulatis, 3–3·3 μ crassis; hyphopodiis unilateralibus v. alternis, breviter stipitatis, cylindraceis, rectis v. leniter curvatis, 10–13·3 × 3–3·5 μ. Thyriothecia sparsa, orbicularia, 150–170 μ diametro, radiatim ex hyphis circ. 3 μ crassis contexta, ambitu plus minus fimbriata, stellatim dehiscentia. Asci subglobosi, aparaphysati, octospori, sessiles, 33–40 μ diametro. Sporae conglobatae, 1-septatae, leniter constrictae, ellipsoidae, cellulis subaequalibus, 20–23·5 × 9–11 μ.

Hab. in foliis *Scolopiae Zeyheri*, East London, 19.7.19, leg. Doidge [12414].

77. **Lembosia piriensis** n. sp.

On leaves of *Trichocladus ellipticus*, Pirie Forest, Kingwilliamstown, 8.7.19, Doidge [12301].

Epiphyllous, on leaf spots up to 1 cm. diameter, sometimes numerous and confluent, covering greater part of leaf surface. Hyphae slender, fuscous, 3–3·5 μ thick, branching and anastomosing irregularly. Hyphopodia sessile, about 4–5 μ diameter, hemispherical or sublobed, developing at irregular intervals. Thyriothecia scattered, ellipsoid, straight, simple or occasionally forked, 300–400 × 190–240 μ, composed of radiating hyphae about 3 μ thick, margin fimbriate. Asci paraphysate, eight-spored, ovate, somewhat thickened round the apex, sessile, 37–40 × 20–24 μ. Paraphyses hyaline, filiform, about 2 μ thick, equalling or slightly exceeding the asci. Spores two-celled, slightly constricted, ellipsoid, upper loculus broader, 17–20 × 6–7 μ, brown when mature. Pycidia flattened-hemispherical, 100–120 μ diameter. Conidia minute, hyaline, bacilloid.

Lembosia piriensis Doidge, nov. sp.

Epiphylla, maculas usque 1 cm. latas insidentia; hyphis tenuibus, fuscis, 3–3.5 μ crassis, ramosis; hyphopodiis sessilibus, circ. 4–5 μ diametro hemisphaericis, v. sublobatis, dispersis. Thyriothecia sparsa, elliptica, recta, simplices v. nonnunquam bifurcata, 300–400 × 190–240 μ, radiatim ex hyphis 3 μ crassis contexta, ambitu fimbriata. Asci paraphysati, octospori, ovati, sessiles, 37–40 × 20–24 μ. Paraphyses hyalinae circ. 2 μ crassae. Sporae 1-septatae, leniter constrictae, ellipsoidae, 17–20 × 6–7 μ, in maturitate brunneae, loculo superiore latiore.

Hab. in foliis *Trichocladi elliptici*, Pirie Forest, 8.7.19, leg. Doidge [12301].

78. **Trichopeltula Carissae** n. sp.

On leaves of *Carissa arduina*, East London, 24.11.17, Doidge [10914]; 19.7.19 [12424].

Epiphyllous, when thinly sown each thallus is plainly visible, consisting of a number of narrow, dull-black, irregularly branched radiating fibrillae; frequently the thalli are so numerous that they coalesce, and the whole leaf surface becomes encrusted with the dull-black growth; thallus irregular in breadth, 95–275 μ broad, formed of narrow, rectangular, radiating-prosenchymatous cells. Conidial pycnothecia, 90–115 μ diameter, containing bacilliform, hyaline, non-septate conidia, 6–8 μ × 1–1·5 μ. Pycnothecia containing asci somewhat larger, 120–140 μ diameter; asci aparaphysate, eight-spored, obovate or obclavate, broadly rounded at the apex, constricted at the base, with a very short foot, 24–30 × 13–16 μ. Spores tristichous, hyaline, oblong, slightly curved, four to five celled, usually four-septate when mature, 10–14 × 3–4 μ.

Trichopeltula Carissae Doidge n. sp.

Epiphylla, thallus vittaeformis, repens, ramosus; vittae brunneo-atrae, irregulares, 95–275 μ latae, radiato-prosenchymaticae, cellulis anguste rectangularibus. Pycnothecia in thallo formata, alia conidiofera, 90–115 μ, alia ascofera 120–140 μ diametro, applanato hemisphaerica, demum apice perforata. Conidia bacillaria, hyalina, continua, 6–8 × 1–1½ μ. Asci aparaphysati, octospori, obovati v. obclavati, supra late rotundati infra in nodum brevissimum coarctati, 24–30 × 13–16 μ. Sporae tristichae, hyalinae, oblongae, subcurvatae, quadriseptatae, 10–14 × 3–4 μ.

Hab. in foliis *Carissae arduinae*, East London, 24.11.17, leg. Doidge [10914].

79. **Trichopeltula kentaniensis** n. sp.

On *Xymalos monospora*, Kentani, 3.3.15, Pegler (Pegler No. 1999) [8866]; Zwartkop, near Maritzburg, Natal, 19.7.18, Doidge [11598].

On *Schmidelia monophylla*, Kentani, 3.3.15, Pegler (Pegler No. 2300) [8865].

This fungus is very similar in appearance to the species on *Carissa*, from which it differs chiefly in the size and form on the asci and spores; the latter are three to four septate, but usually four-septate when mature.

Trichopeltula kentaniensis n. sp.

Epiphylla, thallus vittaeformis, repens, ramosus: vittae brunneo-atrae, irregulares, 64–200 μ latae, radiato-prosenchymaticae, cellulis anguste rectangularibus. Pycnothecia in thallo formata, alia conidiofera 90–110 μ, alia ascofera 160–180 μ diametro, applanato-hemisphaerica, demum apice perforata. Conidia bacillaria, hyalina, continua, 4–6 × 1–1·5 μ. Asci aparaphysati, octospori, ellipsoidei v. subclavati, apedicellati, 30–36 × 13–16 μ. Sporae tristichae, hyalinae, subclavatae, rectae, quadriseptatae, 15–17 × 3·5–5 μ.

Hab. in foliis *Xymalos monosporae*, Kentani, 3.3.15, leg. Pegler [8866].

Fungi belonging to this group appear to be very common in many localities, particularly in the neighbourhood of East London; but, although material has been collected at different seasons of the year, only the two species described above have been found with mature asci. Immature fungi belonging to the *Trichopeltaceae* have been collected near East London and elsewhere on the following hosts: *Acokanthera spectabilis, Behnia recticulata, Buxus MacOwani, Chaetacme aristata, Elaeodendron capense, Elaeodendron croceum, Eugenia* sp. *Putterlichia pyracantha, Rhoicissus rhomboidea, Toddalia natalensis, Trichocladus ellipticus, Umtisa Listeriana.*

80. **Scolecopeltis Cassipoureae** n. sp.

Ascomata hypophyllous, not situated on leaf spots, scattered, superficial, easily becoming detached, opaque, dark-green in the centre, translucent, paler at edges, 550–650 μ diameter, composed of a dense weft of fine hyphae 1–2 μ thick.

Ostiole distinct, round 23–36 μ diameter. Asci aparaphysate, ellipsoid, sessile, 120–170 × 20–26 μ, four to eight spored. Spores parallel or twisted, filiform, 100–120 μ long, six to seven broad at centre, tapering somewhat towards rounded ends, ten to fifteen septate, constricted, easily separating even in ascus into very uneven portions 6–15 μ long.

On leaves of *Cassipourea verticillata*, Buccleuch, Natal, 17.7.18, Doidge [11586].

Scolecopeltis Cassipoureae Doidge, nov. sp.

Peritheciis hypophyllis, sine maculis, sparsis, superficialibus, facile secedentibus, opace atro-coeruleis, lenticulari-scutatis margine alatis, 550–650 μ diametro marginem versus coerulee pellucidis, ibique ex hyphis 1–2 μ latis tenuibus, maeandrice denseque conjunctis contextis, praeterea margine ca. 30–60 μ latofere hyalino ex hyphis 1–2 μ latis anastomosantibus composito cinctis, ostiolo distincto, rotundato, 33–36 μ lato: ascis aparaphysatis, ellipsoideis, sessilibus, 120–170 × 20–26 μ, 2–8 sporis, sporidiis parallelis v. tortis, filiformis 100–120 μ × 6–7 μ, utrinque leniter attenuatis, 10–15 septatis, constrictis, facile secedeutibus.

Hab. in foliis *Cassipoureae verticillatae*, Buccleuch, Natal, 17.7.18, leg. Doidge [11586].

81. **Asterinella Mimusopsidis** n. sp.

On leaves of *Mimusops obovata*, Pirie Forest, Kingwilliamstown, 8.7.19, Doidge [12267]; East London, 19.7.19, Doidge [12409].

Hypophyllous, forming thin black spots up to 5 mm. diameter; mycelium reticulate, alternate or opposite, branching, composed of fuscous-brown hyphae, more or less torulose, and undulate, varying in thickness from 3–6 μ, articulation more or less irregular; hyphopodia none; thyriothecia crowded in centre, or scattered, flattened-hemispherical, 240–320 μ diameter, dehiscing by collapse of central cells or by radial fissure, composed of straight radiating hyphae 3–3·5 μ thick, margin entire or with numerous rather delicate hyphae about 3 μ thick running out into the mycelium. Asci aparaphysate, ovate or narrow ovate, sessile, eight-spored, thickened round apex, 60–70 × 25–35 μ. Spores conglobate, two-celled, brown, constricted at septum, 28–33 × 13–16·5 μ, slightly rough at maturity, upper loculus broader, broadly rounded at both ends.

Asterinella Mimusopsidis Doidge, nov. sp.

Hypophylla, maculas tenues usque 5 mm. latas formans, mycelium ex hyphis fuscidulis, subtorulosis, undulatis 3–6 μ crassis formatum. Hyphopodia desunt. Thyriothecia conferta v. sparsa, orbicularia, 240–320 μ diametro, radiatim ex hyphis rectis 3–3.5 μ crassis contexta, peripherice hyphis longiusculis, flexuosis, 3 μ crassis fimbriata. Asci aparaphysati, ovati, sessiles, octospori, ad apicem incrassati, 60–70 × 25–35 μ. Sporae conglobatae, 1-septatae, brunneae, constrictae, 28–33 × 13–16·5 μ, in maturitate minute verrucosae, loculo superiore latiore.

Hab. in foliis *Mimusopsidis obovatae*, Pirie Forest, 8.9.19, leg. Doidge [12267].

82. **Meliola gemellipoda** n. sp.

On leaves of *Jasminum angulare*, Langholm Estates, Bathurst District, 14.7.19, Doidge [12352].

Epiphyllous, forming round black velvety spots 1–5 mm. diameter. Mycelium compact, fairly dense, formed of straight or slightly wavy hyphae 10 μ thick; cells 20–30 μ long; branching opposite or irregular; capitate hyphopodia opposite, usually one pair to each cell of hypha, 16–23 × 9–10 μ, stipe cell short, 3–5 μ, terminal cell ovate to cylindrical, rounded at the apex. Murconate hyphopodia rare, interspersed with capitate hyphopodia, ampulliform 20–30 μ long × 10 μ thick at base. Mycelial setae fairly numerous, simple, straight, black, opaque except near the somewhat blunt apex, 9–10 μ thick at base, tapering gradually towards apex, 360–600 μ long. Perithecia 200–250 μ diameter, black, globose, smooth. Asci two to three spored, evanescent. Spores four-septate, cylindrical or tapering slightly towards both ends, rounded at both ends, scarcely constricted, 53–60 × 16·5–20 μ. Closely related to *M. Toddaliae*.

Meliola gemmellipoda Doidge, nov. sp.

Epiphylla, maculas atras, orbiculares, 1–5 mm. diametro efformans; mycelio ex hyphis ramosis, septatis, 10 μ crassis composito; hyphopodiis capitatis oppositis 16–23 × 9–10 μ, cellula superiore ovata v. cylindrica; hyphopodiis mucronatis raris, ampulliformibus usque ad 30 μ longis; setis mycelicis numerosis, simplicibus, rectis, opacis, 360–600 μ longis, obtusis; peritheciis 200–250 μ diametro, atris, laevis, globosis; ascis, 2–3 sporis, evanescentibus; sporidiis 4-septatis, ad septa vix constrictis, 53–60 × 16.5–20 μ.

Hab. in foliis *Jasminii angularis*, Bathurst District, Cape Province, 14.7.19, leg. Doidge [12352].

83. **Irene Rinoreae** n. sp.

On leaves of *Rinorea ardesiaeflora*, Karkloof, Natal, 14.7.21, Doidge [14961].

Amphigenous, forming small, round, dull-black spots 1–2 mm. diameter: these are occasionally rather numerous and become confluent, but usually they are scattered and only one to two spots occur on a leaf.

Mycelium reticulate: hyphae dark-brown, semi-opaque, 6–7 μ thick, cells mostly 18–20 μ long, branches opposite, anastomosing, capitate hyphopodia alternate, usually one to each cell, stipitate, 17–26 μ high, terminal cell variously lobed with rounded or truncate lobes 17–20 μ broad. Mucronate hyphopodia rather numerous, interspersed with the capitate hyphopodia, opposite, alternate or unilateral: they are rather peculiar in form, reminding one of penguins at rest, 17–20 μ long and 5–6 μ thick at the base; mycelial setae none.

Perithecia spherical, black, carbonaceous, 140–200 μ diameter, surface cells conical or rounded, projecting to a height of 16–18 μ. (These could hardly be termed appendages; and the species is accordingly assigned to the genus *Irene*.) Asci fugaceous, not seen. Spores four-septate, cylindrical, rounded at both ends, constricted, 40–46 × 16·5–21·5 μ.

Irene Rinoreae Doidge, nov. sp.

Amphigena, plagulas minutas, atras, 1–2 mm. diametro efformans. Mycelio reticulato. Hyphis brunneis, subopacis, 6–7 μ crassis, cellulis plerumque 18–20 μ longis, hyphopodiis capitatis alternis, stipitatis 17–26 μ altis, cellula superiore varie lobata, lobis rotundatis v. truncatis. Hyphopodiis mucronatis numerosis, oppositis, alternis v. unilateralibus, 17–20 μ longis, basi 5–6 μ crassis.

Setis mycelicis nullis. Peritheciis globosis atris, tuberculatis, 140–200 μ diametro. Ascis non visis. Sporidiis 4-septatis, cylindricis, utrinque rotundatis, ad septa constrictis, 40–46 × 16·5–21·5 μ.

Hab. in foliis *Rinoreae ardesiaeflorae*, Karkloof, Natal, 14.7.21, leg. Doidge [14961].

84. **Phyllachora myrsinicola** n. sp.

On leaves of *Myrsine melanophleos*, Duncairn, near Maritzburg, 13.7.21, Doidge [15015].

Stromata epiphyllous, not visible on lower surface of leaf, and not surrounded by discoloured leaf tissue, scattered, ½–1 mm. diameter, black, somewhat shiny, flat, very slightly raised above the epidermis.

Several loculi in each stroma, occupying about half the thickness of the leaf, which is here swollen to about twice its normal thickness. Loculi covered by a common epidermal clypeus which is black, opaque, and variable in thickness. Loculi not closely crowded, subspherical, 180-240 μ diameter, lateral and basal walls well developed, consisting of laterally compressed hyphae, usually hyaline, but sometimes brown at the base and where the lateral walls join the clypeus. Asci clavate 80–100 × 20–27 μ, thick-walled, rounded at the apex, eight-spored, paraphysate, briefly pedicellate. Spores distichous, one-celled, hyaline, ellipsoid or rhomboid-ellipsoid, 16·5–23·5 × 9–10 μ.

Phyllachora myrsinicola Doidge, nov. sp.

Stromata epiphylla, atra, in inferiore foliorum pagina non visibilia, sparsa, ½–1 mm. diametro parum nitidula, loculi pauci in quoque stromate, suborbiculares, 180–240 μ diametro, clypeo epidermale atro, opaco. Asci paraphysati, clavati, octospori, breviter pedicellati, 80–100 × 20–27 μ. Sporae distichae, continuae, hyalinae, ellipsoidae v. subrhomboidae, 17·5–23·5 × 9–10 μ.

Hab. in foliis *Myrsine melanophleos*, Duncairn, near Maritzburg, Natal, 13.7.21, leg. Doidge [15015].

85. **Clypeosphaeria natalensis** n. sp.

On leaves of *Viscum nervosum* growing on *Rapanea melanophleos*, Glen Burnie, Highflats, Ixopo District, Natal, 20.8.21, J. W. Bews [14867].

Perithecia and pycnidia epiphyllous, in scattered groups, similar in form and size, immersed, lenticular, spherical, convex at the apex with a black, opaque epidermal clypeus; 160–200 μ in diameter, very slightly papillate in the centre, where it becomes perforated by a pore; wall black, carbonaceous, 16–20 μ thick.

Asci paraphysate, subpyriform, broadly rounded at the base, narrower at the apex, thick-walled around the apex, which is traversed by a pore, eight-spored, evanescent, 90–120 × 20–27 μ. Spores fuscous, four to five septate, cylindrical or subclavate, parallel or obliquely distichous, 42–54 × 7·5–10 μ.

Conidia hyaline, cylindrical or clavate, rounded at both ends, transversely six to eight septate, 50–62 × 10–11 μ.

Clypeosphaeria natalensis Doidge, nov. sp.

Peritheciis et pycnidiis epiphyllis, gregariis, immersis, lenticulariter sphaeroideis, vertice applanato, convexulo, centro leniter papillulatis demum poro perforatis, atris, 160–200 μ diametro; ascis octosporis, paraphysatis, subpyriformibus, basi late rotundatis, sessilibus, apice incrassatis poro pertusis, evanescentibus, 90–120 × 20–27 μ. Sporidiis fuscis oblique; distichis v. parallelibus, 4–5 septatis, cylindricis, v. subclavatis, 42–54 × 7·5–10 μ.

Conidiis hyalinis, cylindricis v. clavatis, utrinque rotundatis, 6–8 septatis, 50–62 × 10–11 μ.

Hab. in foliis *Visci nervosi*, Ixopo District, Natal, 20.8.21, leg. Bews [14867].

EXPLANATION OF ILLUSTRATIONS.

Fig. 1. *Meliola Carissae.* (*a*) Mycelium with capitate hyphopodia. (*b*) Spores. (*c*) Mycelial setae.
Fig. 2. *Meliola capensis.* Tips of mycelial setae.
Fig. 3. *Meliola dracoenicola.* (*a*) Mycelium. (*b*) Spores. (*c*) Tips of mycelial setae.
Fig. 4. *Meliola Oleicola.* (*a*) Mycelium. (*b*) Spores. (*c*) Tips of setae.
Fig. 5. *Meliola Panici.* (*a*) My elium. (*b*) Spores. (*c*) Tips of setae.
Fig. 6. *Irene Zeyheri.* (*a*) Mycelium. (*b*) Spores.
Fig. 7. Mycelium and spores of *Asterina crotonicola.*
Fig. 8. Mycelium of *Asterina Scolopiae.*

The Thorn Pears

(Scolopia spp.).

By E. P. Phillips, M.A., D.Sc., F.L.S., Division of Botany, Pretoria.

The genus *Scolopia* was founded by Schreber in 1789, and the following year Loudon established the genus *Phoberos* for the same group of plants. It is under the latter name that the species are described in the "Flora Capensis." The genus is included by Bentham and Hooker under the natural order *Bixineae*, but Engler only includes the genus *Bixa* in this family and places *Scolopia* in the family *Flacourtiacecae*. Gilg in Engler's "Botanische Jahrbüch," vol. 40, p. 481, gives a list of the African species, and describes a new species from the Transvaal, viz. *Scolopia Engleri*. Sim ("Forests and Forest Flora," p. 126) recognized three South African species only, viz. *S. Mundii*, *S. Zeyheri*, and *S. Flanaganii*, and regards *S. Ecklonii* and *E. Gerrardii* as co-specific with *S. Zeyheri*. My examination of herbarium material has led me to recognize *S. Zeyheri* and *S. Ecklonii* as specifically distinct, and to regard *S. Gerrardii* and *S. Engleri* as varieties of *S. Ecklonii*. A very distinct species of the genus, collected at Barberton by Mr. G. Thorncroft, is described here.

The presence or absence of thorns is evidently not a constant character as Sim notes, as specimens sent in by Mr. A. O'Connor from the Woodbush Forest, Transvaal, are stated to be sometimes thorny and sometimes thornless. Though this may be the case, yet my examination of the genus does not confirm Sim's suggestion that *S. Zeyheri* and *S. Ecklonii* are the same species. Both the character of the leaves and the presence or absence of hairs on the inflorescence can be used to distinguish them. In herbarium material thorns were present on some specimens of *S. Zeyheri*, and it is only from information supplied by Mr. O'Connor that we can be certain of the presence of thorns in *S. Ecklonii*, as this character was not observed in any of the herbarium specimens. Mr. O. B. Miller, commenting on specimens collected by him in the Amanzamnyama and Buffalo Neck Forests, Mount Frere District, writes: "Yesterday I found a very large old 'red pear' with several sucker shoots growing from the stem at a height of 3 ft. 6 in. from ground-level. So far as I could see the rest of the tree was quite unarmed. It is the first time I have ever observed a thorned tree of this species, except in the seedling stage, when it is always armed. I have since seen another 'red pear' with armed suckers, and the native guard says they are fairly common in this district."

I have not seen authentic specimens of *S. Engleri*, but have examined Transvaal plants which agree with Gilg's description of this species. In some respects it appears to be an intermediate form between *S. Zeyheri* and *S. Ecklonii*, having the pubescent inflorescence of the former and the leaves of the latter, but the specimens are so similar to *S. Ecklonii* and the distribution limited to the bushveld that I prefer keeping it as a variety of this species. I have also decided to place *S. Gerrardii* as a variety of *S. Ecklonii*, as though while the specimens hitherto placed under the former species have a distinctive appearance owing to the size of the leaves, yet the examination of a large series of specimens of *S. Ecklonii* indicated that this species merges into *S. Gerrardii*.

I have to thank the Chief Conservator of Forests, Dr. Schönland, the Directors of the Transvaal and South African Museums, for the loan of the material in their respective herbaria.

KEY TO SPECIES.

Inflorescence a dense cylindric spike about 1 cm. in diameter..... *Thorncroftii.*
Inflorescence a lax raceme.
Leaves small, usually about 2 cm. long and 1 cm. broad; fruit minutely pubescent *Flanaganii.*
Leaves usually over 2 cm. long and 1 cm. broad; fruit glabrous.
Inflorescence pubescent.
Leaves usually ovate in outline..... *Zeyheri.*
Leaves usually obovate or oblanceolate in outline (Transvaal species) *Ecklonii*, var. *Engleri.*
Inflorescence glabrous.
Leaves usually abruptly acuminate and distinctly serrated..... *Mundii.*
Leaves not abruptly acuminated, entire or sometimes remotely serrated..... *Ecklonii.*

S. Thorncroftii, Phillips.

Arbor 6–7 mm. altus. *Rami* glabri. *Folia* 5·5–9·5 cm. longa, lanceolata vel obovata, aliquando subacuminata, apice obtusa, glabra. *Inflorescentia* densa, cyclindrica, circa 1 cm. lata, pubescentia. *Petala* 1·25 mm. longa, linearia, apice acuta. *Filamenta* 6 mm. longa. *Ovarium* 1·5 mm. latum, globosum; stylus 2 mm. longus, apice paullo bifidus.

Transvaal.—Barberton Div.: Barberton, 2900 ft., flowers white, *Thorncroft* 811, and *in Natal Herbarium* 14245.

Tree 20 ft. high. *Branches* glabrous, with the epidermis peeling off in membranous flakes. *Leaves* petioled; petioles 1–1·5 cm. long; lamina 4·5–8 cm. long, lanceolate or obovate, sometimes subacuminate, obtuse, entire, sometimes with wavy margins and with the veining distinct above and beneath, glabrous. *Inflorescence* in dense cylindric axillary spikes about 1 cm. in diameter. *Axis* pubescent. *Flowers* subsessile. *Sepals* 1·5 mm. long, ovate, obtuse, ciliate, pubescent. *Petals* 1·25 mm. long, linear, acute. *Glands* 0·5 mm. long, arranged in a continuous row on the receptacle. *Stamens* numerous; filaments 6 mm. long, surrounded at the base with long hairs; anthers ovate in outline, somewhat apiculate. *Ovary* 1·5 mm. in diameter, globose; style 2 mm. long, subterete, faintly bilobed at the apex.

This is a very distinct species and easily recognized by the dense cylindric inflorescence.

S. Flanaganii (Sim, "Forest and Forest Flora," p. 127, Pl. III.)

A small tree. *Branches* glabrous with raised lenticels. *Leaves* subsessile, 1·1–3 cm. long, 0·5–1·5 cm. broad, elliptic, rarely obovate, obtuse, sparsely serrated on the upper half, with distinct veining, glabrous. *Flowers* not seen. *Fruit* 0·5 mm. in diameter, subglobose, finely pubescent.—*Xylosma Flanaganii, Bolus, in "Journ. Bot.," Jan.*, 1896[r],

Cape Province.—Kingwilliamstown Div.: Kingwilliamstown, *Sim* 2571, and *in Natal Govt. Herb.* 8616.

This species is easily distinguished from the rest of the genus by the sessile leaves and the pubescent fruits.

S. Zeyheri [Szyszy in Pl. Rehmann (1887), 19].

A thorny shrub 8–10 ft. high (ex *Galpin*). *Youngest branches* minutely pubescent or glabrous, sometimes armed with spines 1·5–17 cm. long. *Leaves* petioled; petioles 0·5–1·5 cm. long; lamina 1·3–7 cm. long (usually 2·5–4 cm. long), 1–5 cm. broad (usually 2–3 cm. broad), ovate, ovate-elliptic, elliptic, elliptic-lanceolate, or obovate, more rarely subrotund or obcordate, obtuse or rounded at the apex, more rarely subacuminate or retuse, rounded or cuneate at the base, with entire margins, more rarely subcrenate, with the veining distinct beneath, glabrous. *Inflorescence* an axillary raceme, 2·8–6·5 cm. long, usually lax, but sometimes more or less dense, though never broadly cylindric. *Axis* of inflorescence and pedicels finely but densely pubescent. *Sepals* 0·75–2 mm. long, 0·75–1·5 mm. broad, ovate, oblong, elliptic or suborbicular, obtuse or acute

sometimes subacuminate, usually shortly ciliate, pubescent without. *Petals* when present 1 mm. long, 0·75 mm. broad, ovate. *Glands* 0·25–0·5 mm. long, arranged in a continuous row on the receptacle. *Stamens* numerous; filaments 1·5–3 mm. long, surrounded at the base by long hairs; anthers 0·5–1 mm. long, ovate, or suborbicular in outline. *Ovary* 0·5–1·25 mm. in diameter, globose or ellipsoid, glabrous; style 1·5–2 mm. long, subterete, faintly bilobed at the apex (sometimes each lobe again faintly lobed). *Fruit* (mature?) 5 mm. in diameter, globose, glabrous, tipped with the persistent style.—*Sim*, "*Forest and Forest Flora*," *p.* 126, *pl. ii*; *Gilg in Engl.* "*Bot. Jahrb.*," 40, *p.* 481; *Phoberos Zeyheri*, *Arn.*, "*Flora Capensis*," *I*, 68.

Cape Province.—Bathurst Div.: Port Alfred, *Schlechter* 2733. Stutterheim Div. Katberg, *MacOwan in Natal Govt. Herb.* 1113. Komgha Div.: In woods near Komgha, 2000 ft., *Flanagan*, 863. East London Div.: East London, *Wood in Herb. Galpin* 2828. Somerset East Div.: Zuurberg, *Holland* 279; banks of Klein Visch River, near Somerset East, *MacOwan* 808; woods on slopes of Boschberg, 3000 ft., *MacOwan* 1324. Queenstown Div.: Ridges at Finchams Nek, 4000 ft., *Galpin* 1822.

East Griqualand.—Maclear Div.: In wooded kloofs, Pot River Berg, 5500 ft., *Galpin* 6830.

Natal.—Near Sinkwasi River, 500 ft., wood, Lundies Hill, *Wood* 10170, and *in Natal Govt. Herb.* 10780.

S. Mundii (Warb. in Engl. and Prantl. Pflanzenfam. iii, 6a, 29).

Branches glabrous. *Leaves* petioled; petioles 0·5–1 cm. long; lamina 1·5–7·5 cm. long, 0·7–4 cm. broad (usually 4–5 cm. long and about 2 cm. broad), abruptly acuminate, rarely not acuminate, acute or subacute, more rarely rounded or obtuse, cuneate at the base, with sharply serrated margins, veining distinct beneath, glabrous. *Inflorescence* a lax axillary raceme, 2–3 cm. long. *Axis* of inflorescence and pedicels quite glabrous. *Sepals* 1·5–2·5 mm. long, 1·5–2·5 mm. broad, ovate or subrotund, sometimes subacuminate, acute, obtuse or sometimes rounded at the apex, glabrous. *Glands* 0·5–1 mm. long, usually quadrate in outline, somewhat fleshy and arranged in a continuous row on the receptacle. *Stamens* numerous; filaments 3·5–5 mm. long, surrounded at the base with long hairs; anthers 0·75–1 mm. long, oblong, elliptic or orbicular in outline, usually apiculate at the apex. *Ovary* 1–3 mm. in diameter, globose or ellipsoid, glabrous; style 2·5–3 mm. long, subterete, divided at the apex into two short lobes, sometimes each lobe again faintly lobed. *Fruit* about 1 cm. in diameter, globose, glabrous.—*Sim*, "*Forests and Forest Flora*," *p.* 126, *pl. i*; *Gilg in Engl.* "*Bot. Jahrb.*," 40, *p.* 481; *Phoberos Mundtii*, *Arn.*, "*Flora Capensis*," *I*, 68.

Cape Province.—Cape Div.: Kirstenbosch, in wood, Table Mountain, *Zeyher*. Knysna Div.: Grootkops River, Concordia, *Keet in Herb. Forest Dept.* 2373. Port Elizabeth Div.: Van Staadens, *Zeyher* 3785. Albany Div.: Woods about Grahamstown, 2000 ft., *MacOwan* 957, and *in Natal Govt. Herb.* 226. Komgha Div.: In woods at Prospect Farm Komgha, 2100 ft., *Flanagan* 62. Queenstown Div.: Lesseyton Nek, near Queenstown, 4000 ft., *Galpin* 2146; mountain top, Gwatyn Farm, 5400 ft., *Galpin* 8295.

Transkei.—Tembuland, towards reservoir, near Cala, *Royffe* 204; Pondoland, Engcobo Div.: Manina Forest, *Zahn in Herb. Forest Dept.* 2040; Amamzaminyama Forest, Mount Frere Dist., *Miller in Herb. Forest Dept.*, 3208, 3223.

Natal.—Polela Div.: Polela, Drakensbergen, 6000–7000 ft., *Evans* 624, and *in Natal Govt. Herb.* 7407.

Zululand.—Qudeni Forest, 6000 ft., *Davis* 122, and *in Natal Govt. Herb.* 8807.

Transvaal.—Ermelo Div.: Nooitgedacht, *Pott* 5097, and *in Herb. Transvaal Mus.* 14932.

Basutoland.—Thaba-Bosiu Div.: Banks of Mohale River, *Jacottet in Herb. Dieterlen* 1062. Maseru Div.: Matukeng, slopes of Qeme Mountain, *Dieterlen* 852

A tree 15–20 ft. high (*Evans*). A tree 10 ft. high; drupe yellow (*Galpin*); Sesuto name "Moopa-Koma."

S. Ecklonii [Szyszy, Pl. Rehmann (1887)].

Branches glabrous with raised lenticels *Leaves* petioled; petioles 0·5–1 cm. long; lamina 2·5–11 cm. long, 0·7–3·6 cm. broad, mostly elliptic-lanceolate, more rarely lanceolate, oblanceolate or obovate, rounded or obtuse at the apex, more rarely subacute, cuneate at the base, with entire margins, rarely with a few teeth, with distinct veining, glabrous. *Inflorescence* a lax axillary raceme. *Axis* and pedicels quite glabrous. *Sepals* 1–2 mm. long, 0·75–1 mm. broad, ovate or oblong, obtuse, acute, or subacute, labrous. *Petals* when present 1–1·5 mm. long, linear or oblong. *Glands* forming a rim on the receptacle. *Stamens* numerous; filaments 2–5 mm. long, surrounded at the base with long hairs; anthers oblong or ovate in outline. *Ovary* 1·5 mm. in diameter, subglobose; style 1·5–3 mm. long, faintly or distinctly 2–4-lobed at the apex. *Fruit* 4·5 mm. in diameter, globose.—*Sim*, "*Forests and Forest Flora*," *p.* 127; *Gilg in Engl.* "*Bot. Jahrb.*," 40, *p.* 481; *Phoberos Ecklonii*, *Arn.*, "*Flora Capensis*," *I*, 68.

Cape Province.—Uitenhage Div.: Van Staadens Mountains, *Zeyher* 782. Albany Div.: In woods near Grahamstown, *MacOwan* 1324.

Natal.—Near Tugela River, 500 ft., *Wood* 3951, and *in Natal Govt. Herb.* 4578.

Zululand.—Qudeni Forest, 6000 ft., *Davis* 99, and *in Natal Govt. Herb.* 8806; swamp, Umhlatuzi Forest, *Ballenden in Herb. Forest Dept.* 2559.

Transvaal.—Pietersburg Div.: Potatobosch, Woodbush Forest, 4900 ft., *Botha in Herb. Forest Dept.* 2132; *O'Connor in Herb. Forest Dept.* 2009.

Var. **Gerrardii,** Phillips.

Leaves up to 8 cm. long and 5 cm. broad, with usually undulate margins and sometimes remotely serrated.—*Scolopia Gerrardii*, *Harv.*, "*Flora Capensis*," *II*, 548.

Natal.—Westville, near Durban, 4000–5000 ft., *Wood* 8597, and *in Natal Govt. Herb.* 9320; Sydenham, 300–400 ft., *Wood* 11402.

Pondoland.—Engcobo Div.: Manina Forest, *Zahn in Herb. Forest Dept.* 2041.

Var. **Engleri,** Phillips.

Agrees with the type, but the inflorescence is slightly pubescent.—*S. Engleri*, *Gilg in Engl.* "*Bot. Jahrb.*," 40, 481.

Transvaal.—Derdepoort, *Miss Leendertz* 190. Rustenburg Div.: Rustenburg, *Miss Leendertz* 9773. Pretoria Div.: Betfontein, *Theiler in Herb. Transvaal Museum* 12365; Kaalplaats, *Mogg in Govt. Herb.* 16289.

The Genus Ochna.

By E. P. Phillips, M.A., D.Sc., F.L.S.

The National Herbarium has on many occasions received specimens of *Ochna* from the Forest Department for identification, but found that the naming of the species in herbaria was unsatisfactory. Forest officers have suggested that more species are found in the South African forests than those generally accepted as occurring within the Union, and as some of the species are of economic value it was pointed out by the Chief Conservator of Forests that the genus should be critically examined. With the permission of the Chief of the Division of Botany the writer undertook this work. Without the cordial co-operation of the Forest Department this would not have been possible, and my appreciation is here expressed of the willing assistance received from Mr. J. J. Kotze, B.A., B.Sc., the acting Research Officer at the time. To the various forest officers who have supplied specimens and information the writer is also deeply indebted, especially to Mr. A. J. O'Connor, the District Forest Officer at Doornboom, northern Transvaal, who first pointed out the existence of two distinct species of *Ochna* which occur in the Woodbush Forest, and which had previously been regarded as either *O. arborea* or *O. atropurpurea*, var. *natalitia*. My thanks are also due to the Director of the South African Museum, who allowed me facilities for working at the Cape Government Herbarium, and to Dr. S. Schönland, Mrs. F. Bolus, B.A., Mrs. R. Potts, and Dr. P. J. van der Bijl for lending me the material in their respective herbaria, and to the Director of Kew for comparing some specimens with the Kew material.

At first sight the division of the genus into species appeared an easy matter, but as more material was examined the difficulties of limiting the species increased. The writer has critically examined nearly 200 herbarium sheets, but failed to find any constant characters, either floral or vegetative, which could be used as diagnostic characters for a key to the species, and has had to rely on the general "facies" of the specimens in most cases and has found it difficult to express the differences in words. That the specimens have been grouped correctly may be assumed, as handling a large number of specimens makes one familiar with their "look," but whether a particular specimen can be readily placed in its correct species with the aid of the key given here is more doubtful. However, this difficulty will only apply to a few species related to *O. atropurpurea*; the others are fairly distinct.

In the "Flora Capensis" (Vol. I, 448), three species of *Ochna* are described, but my investigations show that there are nine distinct species in South Africa with the possibility of a tenth. This latter is represented by two sheets illustrating a plant with a prostrate habit, but as Harvey, in the "Flora Capensis" under *O. arborea*, mentions that "shoots from the roots occasionally produce flowers," it is just possible that the specimens may represent such shoots, but no information on this point is available. In all the herbarium specimens examined only *O. pulchra* was correctly distinguished, while the limits of *O. arborea* and *O. atropurpurea* were confused. *O. pulchra* is a typical Transvaal species, but also occurs in Rhodesia, and as far as our records go is absent from the Cape Province and Natal. It is readily distinguished from all the other South African species by the large racemose inflorescence. Other distinguishing characters are the entire leaves (or they usually appear entire to the naked eye) and the long stigmas, which are one-third to a quarter the length of the style. The other species which has entire (or apparently so) leaves is *O. arborea*, but this does not occur in the Transvaal. It has been recorded from the George,

Kynsna, Uitenhage, Albany, Stockenstrom, East London, Kingwilliamstown, Komgha, and Kentani Divisions, and then appears in Natal and extends to Lourenco Marques The inflorescence in this species is also racemose (a very abbreviated raceme), but specimens have passed through my hands in which the flowers are either solitary or 2–4-nate at the apex of short shoots ; this is, however, very rare. The third species, *O. atropurpurea*, as I have limited it, is composed of plants of a shrubby habit, 2–3 ft. high, and can usually be recognised at a glance by the branches having a distinct lepidote appearance due to the presence of numerous prominent lenticels ; the leaves are usually elliptic, sharply serrated, and the flowers solitary. It has a similar distribution to *O. arborea*, but has also been recorded from Zululand and Barberton. The variety *natalitia* has been kept as a distinct species ; it differs from *O. atropurpurea* in habit, and the branches have not the lepidote appearance : the flowers are rarely solitary, and the leaves longer and lanceolate. Though Harvey recognized this variety, he has nevertheless confused it with the species, as in the Cape Government Herbarium there is a sheet (*E. and Z.* 925) labelled on the ticket *O. atropurpurea* and written up as such in Harvey's handwriting, which is undoubtedly *O. natalitia*. This species is not so common in the south-eastern districts as *O. atro purpurea*, but is recorded from several localities in Natal, and then passes through Swaziland to Barberton. Ecklon and Zeyher record it from the Uitenhage Division. The correct limitation of this species has proved the most troublesome, and at first I was inclined to recognize three species. A further examination proved that the first grouping of the specimens was very artificial and that this species should be regarded as a variable one with a wide range of distribution. *O. Chilversii* appears to be confined to the eastern forests, it resembles *O. notalitia* in general habit, but is readily distinguished from this species by the larger number of carpels in the ovary, and the flowers are usually much larger. The two species, *O. O'Connorii* and *O. Holstii*, which occur in the Woodbush Forest are very distinct from all the other South African species. Both are deciduous trees of timber size, and may perhaps be confused in herbaria if leaves are only present, but they differ considerably. *O. Holstii* has a rough bark and ellipsoid fruits, while *O. O'Connorii* has a smooth bark with kidney-shaped fruits. The remaining species, *O. leptoclada*, is found in the Barberton and Lydenberg Districts and also in Rhodesia. Specimens in mature foliage are easily recognized by the oblanceolate leaves, which are long attenuated at the base.

The African species of *Ochna* were monographed by Diels in 1904 (Engl., " Bot. Jahrb.," Vol. XXXIII, p. 232), to which account the reader is referred for a key to all the known African species.

The writer was granted facilities by Mr. Kotze for extracting information about the species from notes sent to the Forest Department by various forest officers.

O. Chilversii. This species is known in the Cwebe Forest by the natives as " sibomvu." The Conservator of Forests, Transkeian Conservancy, remarks : " I was struck with the nice appearance of the wood. It is a soft (hardwood), easy to work. . . . It is plentiful in the Cwebe and other coast forests and approximates *arborea* in size, and could easily be exploited. Possibly it might make an excellent hammer handle." Mr C. C. Robertson remarks on the difference between this species and *O. arborea*. He reported that the " wood, which seems to me far from soft, appears to have the same general character as boxwood, and would probably be suitable for similar purposes," and he suggested that it might be tried for whatever purpose *O. arborea* is used for. The forester at Cwebe, who has handled the wood, describes it as " easy to work and soft."

In the Notinsela Forest the natives know the tree as " umbomvane umncince," and according to Mr. F. M. Fegen the tree occurs both in the Notinsela and Mpimbo Reserves, and appears to be plentiful in the latter locality, and no doubt also in the surrounding forests.

Forester Chilvers mentions that he has only seen one specimen in the Ingeli Forest Reserve. He describes it as a " small tree, stem 5 inches in diameter ; bark not smooth as in *O. arborea* ; leaves not diciduous."

O. Holstii. This species occurs in the Ingeli Forest Reserve and is also found in the Woodbush Forest in the northern Transvaal. The specimens in the Ingeli Reserve, Forester Chilvers describes as "trees of timber size with deciduous leaves; stem attaining to a diameter of 2 ft. to 2 ft. 6 in. with a rough bark." The species is quite plentiful at Ingeli and is known to the sawyers as the "real red pear" as distinguished from *Scolopia*. Forester Tustin describes this species as "a branched tree 40–50 ft. high, stem 18 in. in diameter, with a bole 15–20 ft. Bark grey on the outside and deep red inside. Flowers in September and October and fruits ripen in December. I have only found the tree growing in denser parts of the forest. It is found throughout my patrols (Impetyne and Ingeli) and is sparingly dotted through the forests. Saplings are numerous compared with old trees. I have not seen this tree used for any purpose."

District Forest Officer A. O'Connor, in submitting specimens from the Woodbush Forest, states it to be "a fairly large deciduous tree. The bark is comparatively smooth, though not with the hard smoothness of *O. O'Connorii*, being more flaky and 'chippy.'" It is beet-red under the surface.

Mr. O. Miller (the acting District Forest Officer at Doornboom at the time) states that the species is fairly abundant in the lower, but scarce in the upper, slopes of the Woodbush Forest. It attains a height of 45 ft., with a trunk diameter, at breast high, of 30 in. The species flowers in November and sets its fruits in January.

O. O'Connorii. This tree has only been recorded from the Woodbush Forest, and was collected by Mr. A. J. O'Connor. He noted the differences between this and *O. arborea*, and describes it as a "small tree with smooth bark, very much like the ordinary Cape plane." The local name is "rooihout," "rooi izerhout."

O. arborea. This species may attain the size of a timber tree or may be only 8–10 ft. high. In the Horseshoe Forest, Kingwilliamstown, Forester Whithal records this species as a "tree 30 ft. high, with a diameter of 26 in. at breast high, and is found on a dolerite formation." At Knysna, Mr. J. D. Keet, the District Forest Officer, records it "as common in all parts of the district, being a small tree which forms part of the under storey of the forest, and rarely reaches a height of 1 ft. at breast high." Locally known as the "rooihout." The wood is very strong and of great durability, and is generally used for making handles of tools and axes. The seeds are said to be attacked by caterpillars. Forester Watton states it to be a plant growing in scrub at Knysna, and is known by the name of "rooihout." Forester Strauch sends the following notes with his specimens: "Very plentiful in all the reserves in this (Alexandria) forestal district, and is found throughout the forest. Average height, 10 ft.; average girth, 4 in. In the kloofs it grows much larger and it is found that the bark is much lighter than in trees growing on ridges or exposed positions. The timber is used for making axe and hammer handles. The tree appears to grow more or less plentifully over the forests in the Alexandria District, which are all on sandy soil."

Sim* is in error when he states that this species occurs in the Transvaal.

O. natalitia. This species, which has been regarded as a variety of *O. atropurpurea*, rightly deserves specific rank. Forester F. M. Fegen reports it as a "small tree about 6 ft. high growing at Notinsela Forest. It is very free in flowering and has scented flowers. I have seen several specimens of this tree in the Mpimbo Forest, but it does not appear to grow higher than 6 or 8 ft. Many young plants of *O. atropurpurea* are growing close to this." Forester Fegen further remarks that both species (*O. natalitia* and *O. atropurpurea*) grow on the edge of the forest and appear to be gregarious, growing thickly together. I have not found them well in the forest. Many stunted plants are in "dobo" grass, and have been scorched by fire and have thrown out branches from the base. This species should make a handsome garden plant, and fruiting specimens are particularly beautiful. The Pondos call it "mbomvane ncinci," but do not appear to use it for any purpose.

* Sim, "Forest Flora," p. 164.

O. atropurpurea. Forester Fegen records this as a " small shrub growing to edge of Maseko Forest and which is very plentiful. It has flowered and fruited very sparingly this year (1915) and fruiting specimens are scarce. The leaves, although identical in shape, are smaller on every specimen than those of *O. natalitia.* It is also found at Notinsela. Galls are nearly always present, and the plants, like *O. natalitia,* are confined to the edge of the forest."*

O. pulchra. A small or large tree, 6–20 ft. high. The trunk is smooth and usually white, which makes the recognition of this tree in the veld easy. It is usually in flower late in September, and at the end of October the sepals take on a red colour which makes the species so conspicuous. The young fruits are then forming, and they mature in December. The flowers are sweetly scented ; at first the sepals are bright green, then change to olive-brown and red. The seeds are said to be poisonous.

KEY TO SPECIES.

Inflorescence in definite long or short racemes, sometimes panicled, very rarely solitary or 2–3-nate at the apices of short shoots, but if so then the leaves entire or appearing entire to the naked eye.
- Ovary of 10–13 carpels ..... *Chilversii.*
- Ovary of less than 10 carpels.
  - Leaves entire or appearing entire to the naked eye (rarely serrated, but if so, then never with prominent lenticels), not acuminate ; bark smooth.
    - Racemes 2–12 cm. long ..... *pulchra.*
    - Racemes much abbreviated ..... *arborea.*
  - Leaves serrated, long acuminate, branches not densely covered with prominent white lenticels ; fruit ellipsoid ..... *Holstii.*
  - Leaves serrated, shortly acuminate or cuneate at the apex, rarely rounded ; branches sometimes covered with prominent white lenticels ; fruits ellipsoid or kidney-shaped.
    - Fruits kidney-shaped ; lenticels not numerous and prominent ; a tall tree.
      - Leaves obtuse ; Transvaal species ..... *O'Connorii.*
      - Leaves acute ; Eastern species ..... *arborea.*
    - Fruits ellipsoid, lenticels numerous and prominent ; a large shrub 6–8 ft. high ..... *natalitia.*

Inflorescence solitary or 2–4-nate arising from tha apex of abbreviated shoots.
- Small trees or erect shrubs.
  - Mature leaves up to 9 cm. long, oblanceolate, usually long-attenuate at the base ..... *leptoclada.*
  - Mature leaves very rarely up to 8 cm. long, rounded or narrowed at the base, never long-attenuate.
    - Flowers 2–5-nate on much abbreviated shoots from the axils of the leaves ..... *natalitia.*
    - Flowers solitary, very rarely 2–5-nate, but then arising from the apex of short shoots and not in the axils of the leaves.
      - Lenticels usually dense and prominent, giving the branches a lepidote appearance to the naked eye ; teeth on the margins of the leaves usually triangular in shape, erect, and acute ..... *atropurpurea.*
      - Lenticels usually present, but branches not appearing lepidote to the naked eye ; teeth on margins of leaves usually incurved.
        - Epidermis flaking from the branches in membranous strips ; leaves up to 4 cm. long.. *pretoriensis.*
        - Epidermis rarely evidently flaking in membranous strips ; leaves up to 8 cm. long.. *natalitia.*

O. Chilversii Phillips. *Arbor* parva. *Cortex* sulcata. *Folia,* 3–8 cm. longa, 6–2·5 cm. lata, lanceolata, apice obtusa, basi cuneata, glabra, marginibus serratis. *Inflorescentia* in racemo brevissime disposita. *Ovarium,* 10–13 carpellis.

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* Sim, " Forest Flora," p. 164.

A small tree with a trunk 5 in. in diameter. *Bark* rough. *Branchlets* with reddish-brown to almost black bark, pustulate or not, not flaking. *Leaves* 3–8 cm. long, ·6–2·5 cm. broad, lanceolate, rarely more or less oblanceolate, obtuse, cuneate at the base and passing into a short petiole, rarely rounded, with the midrib distinct above and beneath and the lateral veins evident or not, with serrated margins, glabrous. *Inflorescence* on short shoots in abbreviated racemes, up to 7-flowered. *Pedicels* 1·7–2·2 cm. long, terete, articulated 1–3 mm. from the base, glabrous. *Sepals* 1·4 cm. long, ·7 cm. broad, ovate, obtuse, and rounded at the apex; two of the sepals cucullate at the apex, glabrous (in dried specimens the folding of the sepals gives them the appearance of being acuminate). *Petals* 1·7 cm. long, 1·4 cm. broad, obovate, rounded at the apex, narrowed at the base into a short broad claw. *Filaments* 5·5 mm. long; anthers 3 mm. long, linear-oblong in outline, dehiscing by two apical slits. *Ovary* of 10–13 carpels, about 1 mm. long; style 1 cm. long, somewhat compressed; stigmas either capitate or saucer-shaped, with the stigmatic surfaces arranged round the rim. *Fruit* unknown.

Eastern Region.—Cwebe Forest, July, *Pretorius in Herb. Forest Dept.* 1625; Notinsela Forest, *Fegen in Herb. Forest Dept.* 1817; Ingeli Forest Reserve, December, *Chilvers in Herb. Forest Dept.* 1945; at mouth of Umkwani River, October, *Tyson*, 2619.

O. pulchra (Hook. fil., Ic. Pl. t. 588).

A small or large tree, 6–20 ft. high. *Branches* usually white or light grey to brown in colour, quite smooth or rough, with the epidermis peeling off in membranous flakes. *Leaves* subsessile, 3·5–11 cm. long, 1·5–5 cm. broad, usually elliptic, sometimes elliptic-lanceolate, rarely oblanceolate, rounded or obtuse at the apex, sometimes mucronate, usually narrowed at the base, more rarely rounded or subcordate; margins entire or appearing entire to the naked eye, more rarely with subulate teeth adpressed to the margins, with the mid-rib prominent beneath and the lateral veins distinct, glabrous. *Inflorescence* a many-flowered raceme, 2–12 cm. long. *Pedicels* 1–2·5 cm. long, glabrous, articulated at the base. *Sepals* 6–8 mm. long, 5 mm. broad, elliptic or suborbicular, obtuse, sometimes with cartilaginous teeth on the margins. *Petals* 7·5–9 mm. long, 4·5–5·5 mm. broad, obovate, narrowed at the base. *Filaments* 2 mm. long; anthers 1·5–2 mm. long, oblong or oblong-linear in outline. *Ovary* of 5–7 carpels; style 2 mm. long; stigmas as many as the carpels, about one-third to a quarter as long as the style, recurved, with faintly bilobed apices. *Fruit* 1·1–1·3 cm. long, 8 mm. in diameter, kidney-shaped, and attached to the torus at the middle.—" *Flora Capensis*," *I*, 449.

Transvaal.—Northern Transvaal without precise locality, *Becker in Herb. Albany Mus.*; Pretoria District: Premier Mine, *Rogers* 19846; Magaliesberg, October, *Burke* 302, *Schlechter* 3623; Meintjes Kop, September, *Robertson in Herb. Forest Dept.* 1662; kopjes round Pretoria, September, *Miss Leendertz* 300, 381, May, *Burtt-Davy* 2449; Koedoespoort, September, *Miss Stent in Govt Herb.* 10527; Wonderboom, October, *G.A.Z. in Herb. Forest Dept.* 1686, *Mogg in Herb. Forest Dept.* 1673 and *in Govt. Herb.* 11509, *Galpin* 6977, *Burtt-Davy* 2678 and *in Herb. Forest Dept.* 545, *Miss Leendertz* 431. Rustenburg Dist.: Plains at foot of Magaliesberg, *Miss Pegler* 1032; Wolhuterskop, *Howlett in Govt. Herb.* 16176, *Pole Evans in Govt. Herb.* 15843; Silikats Nek, De Kroon, *Putterill in Govt. Herb.* 16176; Rustenburg, *Miss Leendertz* 3369. Waterberg Dist.: Warmbaths, *Burtt-Davy* 2626; Leeuwpoort Tin Mines, *Rogers* 19071, 21874; Pietpotgietersrust, *Burtt Davy* 2289, *Miss Leendertz* 5635, 2392, *Collector* (?) *in Herb. Bolus* 10a; Chunies Poort, *Pole Evans* 19460.

Rhodesia.—Veld, Victoria Falls, August–October, *Miss Gibbs* 305; sandy soil, Victoria Falls, 2000 ft., *Rogers*, 5301, 5302, 5423; in open forest, Victoria Falls, 2900 ft., *Galpin* 7050; Livingstone, 3000 ft., October, *Rogers*, 7450; Victoria, *Monro* 1594, 2108.

This species is usually in flower late in September, and at the end of October the sepals take on a red colour which makes the plant so conspicuous. The young fruits are then forming and they mature in December. The flowers are sweetly scented; at first the sepals are bright green, then change to olive-brown and red. The seeds are said to be poisonous.

O. arborea (Burch. *ex* D.C. Prodr. 1, 736).

A shrub 8 ft. to a tree 30–40 ft. high. *Bark* smooth. *Branches* with light or dark grey bark, with prominent lenticels and with the epidermis often peeling in membranous flakes. *Leaves* subsessile, 1·5–6·5 cm. long, 0·8–3 cm. broad, mostly elliptic more rarely lanceolate-elliptic or obovate, obtuse or rounded at the apex, rarely acute, narrowed or rounded at the base, quite entire or appearing so to the naked eye, very rarely distinctly serrated; teeth when present more or less subulate and adpressed to the margin of the leaf (except *Wood* 5878, in which the serrations are distinct). *Inflorescence* less than 1 cm. long, in a much abbreviated raceme of 3–7 flowers, very rarely solitary or 2–3-nate at the apex of short shoots. *Pedicels* 0·7–1·2 cm. long, articulated about 1 mm. from the base. *Sepals* 6·5 mm. long, 3·5–5 mm. broad, elliptic or ovate-elliptic, rounded at the apex. *Petals* ·75–1·3 cm. long, 3–5·5 mm. broad, oblong or oblong-obovate, cuneate at the base. *Filaments* 2·5–3 mm. long; anthers 1·5 mm. long, oblong in outline. *Ovary* of 4–6 carpels; style 5·5–6 mm. long; stigmas as many as the carpels, or sometimes stigma subglobose. *Fruit* ellipsoid or almost kidney-shaped, attached to the torus at the middle.—"*Flora Capensis*," *I.* 449; *Sim*, "*Forest and Forest Flora*," 163, *pl. xxix.*

George Dist.: George, August, *Rogers* 4039; Woodville Forest, George, *Sim in Herb. Forest Dept.* 3116, 3117. Knysna Dist.: Knysna Commonage, *Keet* 498; Christies Kloof, Gouna, near Knysna, *Collector* (?) *in Herb. Forest Dept.* 1342; Gouna River, September, *Keet in Herb. Forest Dept.* 2529; Kaffirkop Forest, *c.* 1500 ft., January, *Watton in Herb. Forest Dept.* 2943; De Eiland, *Rabbets in National Herb.* 1420, 1421. Uitenhage Dist.: Oliphants Hoek and Addo, September–October, *E. and Z.* 924; Zuurberg, *Drège*. Alexandria Dist.: Forests near Alexandria, *Strauch in Herb. Forest Dept.* 3012, 3013, 3005. Albany Dist.: Blaauw Krantz Bridge, October, *Galpin* 265; without precise locality, *E. and Z.*; Bothas Hill, December, *Salisbury* 357; Salentown, *Zeyher*; near Grahamstown, *MacOwan* 110. Stockenstrom Dist.: Katberg *Mrs. Hobson* 1446. East London Dist.: Coast near East London, April, *Sim* 2153; East London, July, *Miss Gane* 260; near Nahoon River, August, *Galpin* 3291. Kingwilliamstown Dist.: Along the Buffalo River, near Kingwilliamstown, November, *Flanagan* 359; Horseshoe Forest, December, *Whithal in Herb. Forest Dept.* 2941; Mkobisa Forest, December, *Van der Merwe in Herb. Forest Dept.* 2939; Western Pirie Forest, January, *Kopke in Herb. Forest Dept.* 2940. Victoria East Dist.: Auckland Forest, January, *Ackermann in Herb. Forest Dept.* 2942. Komgha Dist.: Woods near Prospect Farm, November, *Flanagan* 359. Kentani Dist.: Forest near Kentani, July, *Miss Pegler* 1216. Pondoland, Mpingo Forest, *Fegen in Herb. Forest Dept.* 3033, 3089.

Natal: Port Natal, *Gueinzius*; Inanda, August, *Wood* 687, and *in Natal Govt. Herb.* 5878; without precise locality, *Gerrard and McKen* 834, and *in Natal Govt. Herb.* 73; Victoria County, *Wood*; Shafton, Howick, *Mrs. Hutton* 153.

Delagoa Bay: *E. and Z.* 926; *Madame Borlé* 176, 16; *Rogers* 21373.

A large shrub (*Wood*). A forest tree, 15 ft. high, with masses of yellow flowers (*Miss Pegler*). A small tree throughout the whole of the Knysna Forest; generally used for making handles of tools and axes; wood very strong and heavy and of great durability; seeds attacked by caterpillars (*Herb. Forest Dept.* 1342).

O. O'Connorii, Phillips. Arbor. *Cortex* plana. *Folia* 5–10 cm. longa, 1·3–5 cm. lata, lanceolata, raro elliptica vel ovato-lanceolata, apice paullo angustata, obtusa, *Inflorescentia* in racemo brevissime disposita; flores solitarii vel 2–3-nati. *Fructus* 1·5 cm. long, 8 cm. latus, reniformis.

A tree. *Bark* comparatively smooth, somewhat flaky and "chippy," beet-red beneath the surface (*O'Connor*). *Branchlets* somewhat pustulate, reddish-brown to dark-brown in colour, not flaking. *Leaves* 5–10 cm. long (usually 6–8 cm. long), 1–3·5 cm. broad, lanceolate, rarely elliptic or ovate-lanceolate, slightly tapering at the apex, rarely acuminate or rounded and retuse, obtuse, sometimes slightly tapering to the base and rounded, with the mid-rib

prominent above and beneath and the lateral veins distinct above; glabrous. *Inflorescence* racemose with the flowers either solitary or 2–3-nate in the raceme. *Pedicels* 1–2·2 cm. long, articulated 1–4 mm. from the base. *Sepals* 7 mm. long, 5 mm. broad, broadly elliptic, rounded at the apex. *Petals* 1·1–1·2 cm. long, 5–6·5 mm. broad, obovate, rounded above, narrowed into a short broad claw at the base. *Filaments* 2·5 mm. long, anthers 2·5 mm. long, linear-oblong in outline. *Ovary* of 5–6 carpels; style 5·5 mm. long; stigmas as many as the carpels. *Fruit* 1·5 cm. long, 0·8 cm. broad, kidney-shaped, attached to the torus at the concave side.

Transvaal.—Barberton Dist.: Van der Merwes Bush, Pilgrims Rest, 5–5750 ft., January, *Burtt-Davy* 1409; Barberton, February, *Orangie in Colonial Herb.* 1691; *Legat in Colonial Herb.* 1316. Pietersburg Dist.: Woodbush Forest, October, *Grenfell* 3, and in *Colonial Herb.* 1017; *Dwyer*; December–January, *Botha in Herb. Forest Dept.* 2929, 2934; *Legat in Herb. Transvaal Mus.* 9711; by stream at Potatobush, *c.* 4750 ft., January, *Burtt-Davy* 1193; *Eastwood in Colonial Herb.* 1286; Woodbush, 4900 ft. October, *O'Connor in Herb. Forest Dept.* 2198; *Lane-Poole in Herb. Forest Dept.* 547; *Grenfell in Colonial Herb.* 1112; without collector in *Herb. Forest Dept.* 542.

Known as the Cape Plane, Rooihout, Machailo, Rooi Yzerhout, Morelle.

O. Holstii (Engl. in Engl. Pflanzenw. Ostafr. c. 273).

A tree of timber size. *Bark* rough. *Branchlets* varying in colour from light to dark brown, scarcely pustulate, not flaking. *Leaves* deciduous, 5–8 cm. long, 0·8–2 cm. broad, lanceolate, acuminate, obtuse at the apex, narrowed at the base into a short petiole, mid-rib distinct above and beneath, lateral veins not evident, with the margins serrated and with the serrations very erect, glabrous. *Inflorescence* on short shoots in abbreviated racemes, up to 7-flowered. *Pedicels* 1·3–2·7 cm. long, terete, articulated 1–3 mm. from the base. *Sepals* 1 cm. long, lengthening in the fruit, 0·5 cm. broad, elliptic, rounded at the apex, glabrous (in dried specimens the folding of the sepals gives them the appearance of being acuminate). *Petals* 8 mm. long, 5 mm. broad, obovate, rounded at the apex, narrowed at the base into a short broad claw. *Filaments* 5 mm. long; anthers 2 mm. long, oblong in outline, dehiscing by apical slits. *Ovary* of 4–5 carpels about 1 mm. long; style 6 mm. long; stigma globose, faintly lobed. *Fruit* ellipsoid, attached to the torus at one end.

Eastern Region.—Tembuland, Engcobo Mtn., *Flanagan* 2696. Natal: Ngomi, *Tustin in Herb. Forest Dept.* 3115; Ingeli Forest Reserve, December–January, *Chilvers in Herb. Forest Dept.* 1944, 1946; *Tustin in Herb. Forest Dept.* 2907, 2984.

Transvaal.—Pietersburg Div.: Woodbush, December, *Botha in Herb. Forest Dept.* 2935; 4900 ft., November, *O'Connor in Herb. Forest Dept.* 2197; without collector in *National Herb.* 1242. Lydenburg Div.: Pilgrims Rest, Van der Merwes Bush, 5400–5750 ft., January, *Burtt-Davy* 1408; Drakensberg at Pilgrims Rest, *Collector* (?) *in Herb. Forest Dept.* 549. Barberton Div.: Barberton, *Rogers* 14996.

This tree flowers in November and sets its fruits in January. The sawyers call it the "real red pear" as distinct from *Scolopia*. In the Woodbush it is known as "rooi yzerhout."

O. natalitia (Engl. *et* Gilg. in Engl. "Bot. Jahrb.," 33, 236; name only).

Large shrub or small tree. *Branches* usually with prominent lenticels, often numerous, but not appearing lepidote to the naked eye. *Leaves* subsessile, 2–9 cm. long, 0·5–2·5 cm. broad, usually lanceolate, more rarely lanceolate-elliptic or lanceolate-linear, cuneate or slightly narrowed at the base, very rarely rounded at the base, obtuse or rounded at the apex, with serrated, very rarely entire margins, with the teeth usually incurved; the mid-rib distinct above and beneath and the lateral vein evident. *Inflorescence* either solitary or 2-nate from the apex of short shoots, or 2–5-nate arising in the axils of the leaves, very rarely in abbreviated racemes. *Pedicels* 0·4–1·5 cm. long, articulated at the base or

1 mm. from the base. *Sepals* 7–8 mm. long, 4·5–5·5 mm. broad, elliptic or rounded at the apex. *Petals* 0·9–1·2 cm. long, 6–7 mm. broad, obovate, narrowed at the base. *Filaments* 1·5–2 mm. long; anthers 1·5–2·5 mm. long, oblong in outline. *Ovary* of 5–9 carpels: style 4·5–6·5 mm. long; stigma either discoid or stigmas as many as the carpels. *Fruit* 0·8–1·4 cm. long, 5–9 mm. in diameter, ellipsoid, more rarely subglobose. *O. atropurpurea*, var. *natalitia*, "*Flora Capensis*," *I*, 448; *Sim*, "*Forest and Forest Flora*," *p.* 163.

Coast Region.—Uitenhage Div.: Uitenhage, May, *E. and Z.* 935; Motinsele Forest, December, *Fegen in Herb. Forest Dept.* 1816, 1818.

Eastern Region.—Natal: Berea, 200 ft., August, *Wood* 10060; *Wood in Natal Govt. Herb.* 10062, 10064; without precise locality, *Wood* 6418; near Durban, *Wood* 72; Benvie, Karkloof, 4000–500 ft. *Wylie in Natal Govt. Herb.* 10826; (*Wood* 10034); Umzinyati, 200–500 ft., October, *Wood* 11458; without precise locality, *Cooper* 1252.

Orange Free State: Elandshoek, September, *Rogers in Herb. Transvaal Museum* 2587.

Swaziland.—Komassan Valley, Havelock Concession, July, *Galpin* 983.

Transvaal.—Without precise locality, *Miss Stent, in Herb. Transvaal Mus.* 8779. Pietersburg Div.: The Downs, *Rogers* 22133; Tzaneen, *Rogers* 12540. Barberton Div.: Umvoti Creek, near Barberton, 3000 ft., November, *Galpin* 660; *Rogers* 20267; Nelspruit, October, *Breyer in Herb. Transvaal Mus.* 17701; between White River and Nelspruit, *Burtt-Davy* 1510; Carolina, September, *Roberts in Herb. Transvaal Mus.* 15874.

O. leptoclada (Oliv., "Fl. Trop. Afr." I, 318).

A bush, 2–3 ft. high (*Galpin*). *Branches* somewhat pustulate with ash-grey bark and with the epidermis peeling off in membranous flakes. *Young leaves* 2·5–6·5 cm. long, 0·6–1 cm. broad, lanceolate, subacute, tapering at the base, with serrated margins, sometimes subentire. *Mature leaves* 5–11·5 cm. long, 1·4–3·4 cm. broad, mostly oblanceolate, sometimes lanceolate-elliptic, rounded at the apex, usually long-attenuate at the base, more rarely only narrowed, with the mid-rib prominent above and beneath, and the lateral veins distinct, with serrated margins, rarely subentire. *Inflorescence* mostly unbellate on abbreviated shoots, 3–4-flowered, sometimes flowers solitary. *Pedicels* 1–2·5 cm. long, articulated at the very base. *Sepals* 7 mm. long, 5 mm. broad, obovate or elliptic, rounded at the apex. *Petals* 1 cm. long, ·5 cm. broad, obovate, rounded at the apex, narrowed into a claw at the base. *Filaments* 3·5 mm. long; anthers 1·5 mm. long, oblong-linear. *Ovary* of 5 carpels; style 4·5 mm. long; stigma capitate. *Fruit* about 6 mm. in diameter, subglobose.

Transvaal.—Barberton Div.: Barberton, November, *Rogers* 18264, and *in Herb. Transvaal Mus.* 15976; mountain sides, Moodies, near Barberton, September–October, 3500 ft. *Galpin* 590; mountains near Barberton, *Bolus* 7693. Lydenburg Div.: Pilgrims Rest, *c.* 3500 ft., October, *Rogers*, 23068, and *in Herb. Transvaal Mus.* 20541.

Rhodesia.—North-West Rhodesia: Pemba, 3500 ft., October, *Rogers* 8579; Ndola, October, *Allen*, 304; Chilanga, 3500 ft. *Rogers* 8455. Umtali Div.: Odanzi River Valley, *Teague* 399, 497.

Belgian Congo: Elisabethville, 4800 ft., *Rogers* 10194.

O. atropurpurea [D.C. in "Ann. Mus. Par.," XVII (1811), 412].

Small shrub, 3–5 ft. high. *Branches* densely covered with prominent lenticels giving them a lepidote appearance to the naked eye. *Leaves* subsessile, 0·8–5 cm. long, 0·4–1·9 cm. broad, usually elliptic, rarely elliptic-ovate, elliptic-oblong, or elliptic-lanceolate, more rarely lanceolate, obtuse, rounded or slightly narrowed at the base, with serrated margins and the teeth usually triangular erect and acute, more rarely incurved, with the mid-rib

prominent above, and lateral veins evident. *Flowers* solitary at the apex of short shoots, very rarely 2-nate. *Pedicels* 1–1·5 cm. long, articulated at the base or about 1 mm. from the base. *Sepals* 6–7 mm. long, 3–6 mm. broad, elliptic, elliptic-ovate or elliptic-oblong, rounded at the apex. *Petals* 0·9–1·3 cm. long, obovate, cuneate at the base. *Filaments* 2–2·75 mm. long; anthers 2–3·5 mm. long, oblong or linear in outline. *Ovary* of 5–6 carpels; style 5–7 mm. long; stigmas as many as the carpels. *Fruit* 7 mm. long, about 5 mm. in diameter, subglobose.—"*Flora Capensis*," *I*, 448; *Sim*, "*Forests and Forest Flora*," *p.* 163, *pl. xxix*, *fig.* 2.

Cape Province.—Caledon Div.: Genadendal, 2500 ft., April, *Schlechter* 7749; Bedford, June, *Miss Nicol* 49. Knysna Div.: Woods at Knysna, *Newdigate in Herb. Albany Museum*; *Watton in National Herb.* 1419. Port Elizabeth Div.: Van Stadens, September, *Mrs. Patterson* 737, *MacOwan in Cape Govt. Herb.* Albany Div.: Howisons Poort, near Grahamstown, *MacOwan in Herb. Austro-Afric.* 1766; Rockliffe, near Sidbury, November, *Miss Daly* 771; Grahamstown Commonage, 2000 ft., September, *Schönland* 570; rocky hills near Grahamstown, 2000–2500 ft., August, *Galpin* 48; near Grahamstown, September, *MacOwan* 111; and in *Natal Govt. Herb.* 850; January, *Breyer in Herb. Transvaal Mus.* 16866; Signal Hill, near Grahamstown, 2200 ft., September, *Bolus* 1920. Queenstown Div.: Among rocks on hillside, Junction Farm, Queenstown, 2500 ft., *Miss Wiggill in Herb. Galpin* 8257. East London Div.: East London, December, *Breyer in Herb. Transvaal Mus.* 16544. Komgha Div.: Wood near Prospect Farm, November, *Flanagan* 322. Stockenstrom Div.: In bush at Willisdale, September, *Scully* 77; Kat River, *Bartels*; Katberg Forest, January, *Stapels in Herb. Forest Dept.* 2937, 2938 Stutterheim Div.: Stutterheim, December, *Rogers* 12726; Transkei, Umtata, *Convent School Herb.* 194; Kentani, 1200 ft., October, *Miss Pegler* 194; rocky spots near Bazya, 2000 ft., October, *Baur* 258; Maseko Forest, Negeleni, December, *Fegen in Herb. Forest* Dept. 1819; Pondoland, Mgazama River, near McAllister's Drift, Port St. Johns, *Miller in Herb. Forest Dept.* 3024.

Natal.—Near Umkomaas River, October, *Tyson* 2659; Natal Bay, *Gueinzius*; without locality, *Wood* 190.

Zululand.—Qudeni Forest, 6000 ft., January, *Davis* 108.

Transvaal.—Barberton Div.: Near Barberton, September, *Bolus*. A small stunted shrub. Plentiful on edge of forest, but does not appear to seed freely (*Fegen*).

Var. **angustifolia,** Phillips. Differs from the type in having smaller, narrower lanceolate leaves.

Transvaal.—Barberton Div.: Margin of wood, upper Moodies, 4500 ft., June, *Galpin* 963, and *in Natal Government Herb.* 8761. Ermelo Div.: Nooitgedacht, December, *Mrs. Pott* 5096, and *in Herb. Transvaal Mus.* 14933. Lydenburg Div.: Between Pilgrims Rest and Sabi, *Rogers* 23410.

Swaziland.—Havelock Concession, *Saltmarsh in Herb. Galpin*. A shrub 3 ft. high (*Galpin*).

O. pretoriensis, Phillips ("Flowering Plant S. Afr.," vol. ii).

Branchlets with light to dark-brown bark, peeling in membranous strips, not distinctly pustulate. *Leaves* 1·5–3·8 cm. long, 0·5–1·7 cm. broad, lanceolate, obovate, elliptic, or oblanceolate (mostly oblanceolate), obtuse at the apex, cuneate, more rarely rounded at the base, with serrated margins and with the mid-rib distinct and lateral veins evident. *Flowers* solitary, very rarely 2-nate, arising at the apex of abbreviated shoots. *Pedicels* 1–1·5 cm. long, articulated at the base or 1–2 mm. above the base. *Sepals* 7–8 mm. long, 4–5 mm. broad, ovate or elliptic, rounded at the apex, sometimes 2–3-lobed at the apex, enlarging in fruit. *Petals* 1·5 cm. long, 8·5 mm. broad, obovate, rounded at the apex, narrowed at

the base into a claw. *Filaments* 4·5 mm. long; anthers 2 mm. long, oblong in outline. *Ovary* of 4–5 carpels; style 5 mm. long; stigmas as many as the carpels. *Fruit* 7–8 mm. long, 5–6 mm. broad, more or less ellipsoid.

Transvaal.– Pretoria Div.: Below River Redoubt, Daspoort Rand, October (fruits), *Pole Evans* 157; Pretoria, December (fruits), *Nelson in Herb. Transvaal Mus.* 11709; February (fruits), *Miss Leendertz* 65, *and in Herb. Transvaal Mus.* 4199; November (flowers) *Miss Leendertz* 301; Meintjes Kop, March (fruits), *Pole Evans* 353; Kopje near Gezina, *Phillips in National Herb.* 1422; *Fouche in National Herb*, 1491; Moorddrift, October (fruits), *Leendertz* 2131, and *in Herb. Transvaal Mus.* 7333; Rikatla, October (fruits), *Junod* 147, and *in Herb. Transvaal Mus.* 20146; near Messina, *c.* 1800 ft., November (fruits), *O'Connor in Herb. Forest Dept.* 1936; Messina, October (fruits), *Rogers* 19398, 20029, 19244, and *in Herb. Transvaal Mus.* 17762.

The Genus Olinia.

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The genus *Olinia* was founded by Thunberg in 1799 ("Roem. Arch.," II, i, 4, 1799), and belongs to the natural order *Lythrarieae*. The genus contains important forest trees, and was first dealt with in this connection by Sim in his "Forests and Forest Flora," p. 227. Sim only recognized one species, viz. *O. cymosa*, but divided this into three varieties, as follows :—

Var. *latifolia*, mostly in the Western Province.
Var. *intermedia*, found in the Midland Conservancy and sparingly elsewhere.
Var. *acuminata*, the common form in the Eastern and Transkeian Conservancies.

The examination of all the material in the South African herbaria has led us to regard var. *latifolia* and var. *intermedia* as belonging to the species *O. cymosa*, and var. *acuminata* as a distinct species which Klotzsch first named *O. acuminata*. The leaf characters which Sim gives for the first two varieties are not constant in the areas in which they are stated to occur, and we have failed to find even constant varietal characters. The var. *acuminata* which has again been raised to specific rank can easily be distinguished from *O. cymosa* by the shape of the petals and, to a lesser degree, by the shape of the leaves. In the former the petals are "linear-spathulate" (Pl. II, figs. 2, 3), while in the latter (*O. cymosa*) the petals are "obovate-spathulate" (Pl. I, figs. 2, 3). These characters, in conjunction with its distinct distribution, all point to the tree being quite distinct from *O. cymosa*. It is the plant which Sim has figured on Plate LXXII in his work cited above.

In the "Index Kewensis" two other specific names are mentioned, viz. *O. ternata*, Gilg and *O. micrantha*, Decne. As no other descriptions of these were available in South Africa, the Director of Kew was asked for assistance. In a letter from Kew received in January, 1921, it is stated that "the name *O. ternata*, Gilg is apparently not yet published but Gilg determined a specimen himself collected by Mrs. H. Hutton at Howisons Poort near Grahamstown as this species." There can be no doubt that this is *O. cymosa*. From the description of *O. ternata*, Decne., kindly sent to us by the Director of Kew, we also have no hesitation in confirming this to be *O. cymosa*. Decaisne founded his description on *Burchell* 3592, which was not represented in any of the South African herbaria. Another species from Zululand and East Pondoland was named by Dr. Stapf as *O. radiata* but the name has not been published. As this name is now known to foresters, we do not propose to change it.

The Curator of the Botanical Department of the British Museum was good enough to furnish a scrap of *Welwitsch* 991 collected at Huilla and stated to be *O. cymosa*, but an examination of this makes it very doubtful whether *O. cymosa* does occur in tropical Africa. This has now been confirmed by Kew, as the Director writes : "*Welwitsch* 991 is not represented at Kew, but reference to the British Museum material leads us to agree that it is distinct from *O. cymosa*. It very closely resembles *O. usambarensis* (*Holst* 9115)."

Through the courtesy of the Forest Department, we have been able to give some notes on two of the species, *O. cymosa* and *O. radiata*.

Mr. J. D. Keet, District Forest Officer, Knysna, writes regarding *O. cymosa* : " Found in all forests in Knysna and Zitzikamma Districts, mostly in forests on the coastal plateau at elevations of 700 to 900 ft. approximately, less frequent in the forests on the foothills and mountain ravines and scarce in the coastal scrub. Its total range is from 300–400 to 2000 ft. approximately. It is comparatively intolerant of shade and superflous soil moisture, and generally avoids cool slopes, ravines, low-lying ground, and streams. It is often a forerunner of the forest-like ' Keur ' (*Virgilia capensis*), ' Beech ' (*Myrsine melanophleos*), etc., and like the Sneezewood (*Ptaeroxylon utile*), it prefers the crests of ridges, rocks, and stony ground. Other conditions being suitable, it grows equally well on soils originating from Table Mountain Sandstone, Bokkeveld, Conglomerate, and old sand-dunes (?). The result is that it is found mostly on ridges on the north and west slopes near the crest of a ridge, the edge of the forest, and frequently in small groups or as isolated trees in the ' fijnbos.' It is a medium-sized tree in height and usually in bole. The thickest I have measured is 15 ft. in girth, the largest bole 32 ft., and the greatest height 70 ft. (estimated). The thicker trees are often somewhat gnarled, fluted, and buttressed, and with unsound heartwood. Where exposed to the full light it forms full-foliaged and much-branched symetrical crowns on low stems. This is generally the case in older trees which have been a forerunner of the forest. The bark is thin, usually dark, and decorticating in scales on the lower part of stems of older trees ; sometimes reddish or brownish pigment shows in the cracks and under the scales. Bark on the smaller branches smooth and grey. At a glance in the forest the bark may sometimes be confused with that of ' Quar ' (*Plectronia obovata*). The wood is used in wagon work (such as felloes, spokes, long-wagon poles), fencing and telegraph poles, railway sleepers, furniture, etc. The plant coppices freely, and coppice shoots are vigorous on small and medium sized trees, but usually too dense, in which case all may die back at a height of 6–8 ft., when fewer will reach pole size in twenty to twenty-five years. On stools of trees felled in 1917 at Harkerville the coppice is now 6–8 ft. high. Seedlings occur sparingly in open space in worked-out forests and in the ' fijnbos ' edge, but are absent in dense forest. Several attempts to germinate the seeds in nurseries have either failed completely or given very poor results. Seedlings and saplings in the forest are fairly fast growing. In the forest a rough and ready test by which the tree may be recognized is the strong prussic acid or almond smell of the leaves, twigs, freshly-cut bark, and sapwood. The name ' mountain hard pear ' is applied to this species."

O. radiata. This is said to be the largest tree growing in the Ingeli Forest, and is over 12 ft. girth at breast high. The District Forest Officer, Transkeian Conservancy, reports " that the bark has a strong almond-like smell, and when placed in water turns it a blue-black colour. The wood is used for felloes." Forester Fegen, in submitting specimens of the tree, states : " This tree grows to a large size and is very plentiful in the Izinja, Ngododo, Qakama, Maseko, and neighbouring forests, and is not found elsewhere in the district. The young wood is quadrangular, usually red in colour, as are the leaves. Flowers white with a tinge of purple in small dense clusters. Fruit plum-shaped, reddish purple in colour when ripe, is eaten by birds, and I hear by natives. The tree flowers about November and the fruit is ripe about July. The wood is reported to be hard and durable, but nothing is really known about the tree here. Young trees and saplings are used by the natives." Forester Leigh gives the native name of the tree as " umpanzi," and states that sawyers confuse this with " umpanzite " (*Phyllanthus amapodensis*) as the wood is the same. It is fairly abundant in the Ntsubane Forest. Forester Leigh also states that he only knows of it growing between Umsikaba and Umzimhlava Rivers, and that it is a large semi-deciduous tree 60–70 ft. high with a girth of 10–12 ft. Old trees grow out in ribs near the ground. Used for wagon work (naves, felloes, etc.), and believed to make a good charcoal. It is plentiful in parts of the Ntsubane Forest, but on the whole scarce.

O. acuminata. We have not been able to obtain any special information about this species, but in the Woodbush Forest, Pietersburg, Transvaal, it is known as " roodebosje."

The distribution of the three species found in South Africa is fairly well defined,

Plate I.

Olinia cymosa, Thunb.

Olinia cymosa extends from the Cape Peninsula along the coastal belt as far as the Kei mouth, beyond which we have no record of its occurrence. MacOwan collected the species at Somerset East, which is the only record of its inland occurrence.

Olinia radiata. Is found in the Pondoland forests and extends as far as Ingeli in Natal.

Olinia acuminata. This is an inland species. The most southern record is at Queenstown, and from there it extends to the slopes of the Drakensberg in East Griqualand to the mountainous districts of the eastern Transvaal (Barberton), and occurs again in the Woodbush Forest in the Pietersburg District. An outlier of the species is recorded from the Magaliesberg in the Transvaal.

The flowers are largely infected by a Hemiptera larva which appears to arrest their development, which is reflected in the length of the calyx-tube. In some specimens the calyx-tube is much longer than the petals, in other it equals the petals, while specimens are found in which the calxy-tube is shorter than the petals. All gradations are found even on the same specimen.

Two specimens of *O. cymosa* differ slightly from the other specimens of the species examined in that the petals are rounded at the apex and not bluntly pointed (East London, *Rattray* 840, Somerset East, *Bolus* 1772), but in specimens collected by *Flanagan* near the Kei mouth both forms of petals occur.

KEY TO SPECIES.

Petals obovate-spathulate	*cymosa.*
Petals linear-spathulate.	
Inflorescence lax, about half as long as the subtending leaf	*acuminata.*
Inflorescence compact very much shorter than the subtending leaf	*radiata.*

Olinia cymosa, Thunb., "Flora Capensis," 194. (Plate I.)

Branches glabrous. *Leaves* 3·7 cm. long, 1–3·5 cm. broad, lanceolate, obovate, elliptic, acuminate, obtuse, sometimes rounded at the apex, narrowed at the base into a distinct petiole, margins entire, sometimes wavy, glabrous, green and shiny above, paler beneath. *Inflorescence* axillary, a dense trichotomous cyme, very much shorter than the subtending leaf. *Bracts* opposite, same length as the flowers, often deciduous. *Penduncles* minutely pubescent. *Calyx-tube* 1–6 mm. long, glabrous or minutely hairy with five minute teeth. *Petals* five, inserted at the throat of the tube, about one-third the length of the calyx, rarely equalling it, spathulate, acute or obtuse at the apex, with a cluster of hairs at the base. *Scales* five incurved, alternating with the sepals, minute, obovate, densely hairy. *Stamens* five, adnate to calyx below the scales; filaments very short. *Ovary* inferior, five-celled, with three pendulous ovules from a central placentum in each cell; style subulate; stigma obtuse. *Fruit* globose, 1 cm. in diameter.—"*Flora Capensis,*" *II*, 520, *Excl. var. acuminata*; *Sim*, "*Forest and Forest Flora,*" 227, *Excl. var. acuminata, pl. LXXII, fig.* 14.

Cape.—Slang Kuil, Table Mountain, October, *MacOwan in Herbarium Austro-africanum* 927; Kirstenbosch, Table Mountain, November, December, *Harvey*, July, *Zeyher* 179 and 244; August, *L. Kensit in Herb. Bolus Austro-africana* 10748; Table Mountain, August, *M. Page in Herb. Afric. Bolusianum* 1633; Devil's Peak, September, *Zeyher*; Paarl, August, October, *Drège*; Hottentot Hollands Mts., July, *Zeyher*; Swellendam, Voormansbosch, October, *Zeyher*; Grootvadersbosch, October, *Pappe* 130, *Zeyher*, 2434; Knysna, Commonage forests, August, *J. D. Kect in Herb. Forestry Dept.* 2336; May, *Scott-Elliot in Forest Dept. Herb.* 1349; Collector (?) *Forest Dept. Herb.* 1350. Port Elizabeth: September, *I. L. Drège in Herb. Albany Museum* 541; August, *F. Paterson in Herb. Africanium Bolusianum* 2320, 2319, 1155; August, *Dom. Honseley in Herb. Albany Museum.* Humansdorp: August, *F. A. Rogers in Herb. Albany Museum* 3016. Van Stadens: September, *T. V. Paterson in Herb. Albany Museum* 230. Bethelsdorp: September, *T. V.*

Plate II.

Stella Gower.

Olinia acuminata, Klotz.

Paterson in Herb. Albany Museum 2151. Somerset East: November, *H. Bolus* 1772. Grahams' own: "Amos's Vil," *MacOwan* 349; August, September, *E. E. Galpin in Herb. Albany Museum* 88. Howisons Poort: September, *Schönland* 818; *Zeyher* 2465. East London: October, *Geo. Rattray in Herb. Albany Museum* 840; Kei Mouth, July, *Flanagan* 2341.

Olinia acuminata, Klotz in "Otto and Dietr. Allg. Gartenz," IV (1836), 27 (Pl. II).

Branches glabrous. *Leaves* 2–3 cm. long, 0·5–1·5 cm. broad, lanceolate, elliptic, acuminate, narrowed at the base into a more or less distinct petiole, with entire margins, glabrous, green and shiny above, paler beneath. *Inflorescence* an axillary trichotomous cyme, a little shorter than the subtending leaf. *Bracts* deciduous. *Calyx-tube* 2–9 mm. long, glabrous or minutely pubescent, with five minute teeth. *Petals* five, inserted at the throat of the calyx-tube, about one-third the length of the calyx, linear, rounded at the apex, with a small tuft of hairs at the base. *Scales* five, incurved, alternating with the petals, minute, obovate, densely hairy. *Stamens* five, adnate to calyx below the scales; filaments very short. *Ovary* inferior, five-celled, with three pendulous ovules from a central placentum in each cell; style subulate; stigma obtuse. *Fruit* globose, 3 mm. in diameter.—"*Flora Capensis*," *II*, 520, *O. cymosa, var. acuminata*; *Sim*, "*Forests and Forest Flora*," 227.

Cape.—Queenstown, Rockwood, Bongolo, February, *E. E. Galpin* 2500. Transkei, Kaffraria, January, *T. R. Sim* 2026; June, 2099.

Natal.—Maclear, Pot. River Berg, March, *E. E. Galpin* 6628, 6629; Drakensberg, May, *J. Medley Wood* 4957; Giant's Castle, June, *R. E. Simons in Herb. Trans. Museum* 15965.

Transvaal.—Barberton, Upper Moodies, January, *E. E. Galpin* 1275; Rustenburg, January, *Olive Nation in Herb. Bolusianum* 1906; Magalisberg, *Zeyher* 494; Woodbush, northern Transvaal, January, *O. J. O. O'Connor in Forest Dept. Herbarium* 1458; Dulstroom, January, *F. O. Noome in Herb. of Trans. Museum* 20812; Elandspruitberg, December, *R. Schlechter* 3864.

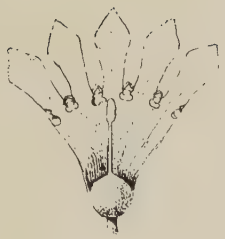
Olinia radiata, sp. nov. (Plate III). *Rami* glabri. *Folia* 5–8 cm. longa, 1·8–3·8 cm. lata, lanceolata, obovata, lanceolato-elliptica vel elliptica, subacuminata, apice obtusa vel aliquando subrotundata, basi angustata. *Inflorescentia* axillaria, compacta. *Pedunculus* minute pubescens. *Calyci tubus* 1·4 mm. longus, glaber vel minute pubescens. *Petala* 1·2 mm. longa, linearia, spathulata, apice acuta. *Squamae* minutae, obovatae, pilosae.

Branches glabrous. *Leaves* 5–9 cm. long, 1·8–3·8 cm. broad, lanceolate, obovate, lanceolate-elliptic, or elliptic, mostly subacuminate, obtuse, more rarely rounded at the apex, narrowed at the base into a more or less distinct petiole, margins entire and usually wavy, glabrous. *Inflorescence* axillary, a dense trichotomous cyme, very much shorter than the subtending leaf. *Bracts* opposite, smaller than the flowers, deciduous. *Peduncles* minutely pubescent. *Calyx-tube* 1–4 mm. long, glabrous, or minute hairy; teeth very minute. *Petals* five, inserted at the throat of the calyx-tube, 1–2 mm. long, linear-spathulate, acute, with a small tuft of hairs at the base. *Scales* incurved, alternating with the petals, minute, obovate, densely hairy. *Stamens* five, adnate to the calyx below the scales; filaments very short. *Ovary* inferior, five-celled, with three pendulous ovules from a central placentum in each cell; style subulate, stigma obtuse. *Mature fruit* globose, 1·8 cm. in diameter.

Transkei: Ngadodo Forest, Ngqeleni, November, *Fegen in Herb. Forest Dept.* 2286, and in *Government Herb.* 18361; September, *Fegen in Herb. Forest Dept.* 2490. Pondoland: Ngadu Forest Station, May, *Van der Vyver in Herb. Forest Dept.* 2472. Lusikisiki Dist.: Ntsubani Forest, *A. Leigh in Herb. Forest Dept.* 2051, 1553; Mpanzi, February, *A. Leigh in Herb. Forest Dept.* 1839. Natal: Ingeli Forest Station, November, *C. W. Chilvers in Herb. Forest Dept.* 1942; Impetyne, February, *J. S. Henkel in Herb. Forest Dept.* 2382.

Plate III.

2



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1

Stella Gower.

Otinia radiata, Phill. and Hofmeyr.

EXPLANATION OF PLATES.

Plate I.—*Olinia cymosa*, Thunb.
- Fig. 1. Portion of branch.
- Fig. 2. Flower.
- Fig. 3. Longitudinal section of flowers showing stamens, scales, ovary, and style.
- Fig. 4. Scale.
- Fig. 5. Cross-section of ovary.
- Fig. 6. Stamen.
- Figs. A, B, C. Types of leaves.

Plate II.—*Olinia acuminata*, Klotz.
- Fig. 1. Portion of branch.
- Fig. 2. Flower.
- Fig. 3. Longitudinal section of flower.
- Fig. 4. Scale.
- Fig. 5. Stamen.
- Fig. 6. Cross-section of ovary.

Plate III.—*Olinia radiata*, Phill. and Hofmeyr.
- Fig. 1. Portion of branch.
- Fig. 2. Flower.
- Fig. 3. Longitudinal section of flower.
- Fig. 4. Scale.
- Fig. 5. Stamen.
- Fig. 6. Stamen and scale.
- Fig. 7. Cross-section of ovary.

The Genus Cyclopia, Vent.

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The genus *Cyclopia* was founded by Ventenat in 1808. Two years later a plant, now known as *Cyclopia genistoides*, was figured in the *Botanical Magazine*, t. 1259, and described as the type of a new genus, viz. *Ibbetsonia*. In 1825 the genus *Cyclopia* was dealt with in De Candolle's "Prodromus" (Vol. II, p. 101), and three species described, and it was not until 1861 that Harvey revised the genus in the "Flora Capensis" (Vol. I, p. 6). Since Harvey's account nothing has been written on the genus, but in the interval much material has accumulated in local herbaria which extends our knowledge of the species.

Several species of *Cyclopia* have become of some commercial value locally as the source of "bush tea," and it was with the object of clearly defining the known species as a foundation on which any future experimental work might be based that this revision of the genus was undertaken.

Harvey in the "Flora Capensis" recognized nine species, but our examination of all the available local material has led us to subdivide the genus into twelve very distinct species. The species are all shrubs with ternate, very often revolute leaves, and yellow flowers. They are mostly confined to the Western Province and the south-eastern regions, but one species extends as far as Port Elizabeth. According to observations made by Forest Officers, most of the species grew well in all situations and soils, except on stiff clayey soils. The cultivation of the species used as "bush teas" should be experimented with, and should not prove difficult, though the young seedlings may require some shelter until firmly established.

The method at present used for preparing "bush teas" for local consumption is to heat the leaves in an oven for about an hour to produce "sweating," after which they are dried in the sun. When thoroughly dry the leaves and smaller twigs are removed from the stem and larger branches, packed, and sold under various names. If the demand for "bush tea" is sufficiently great, cultivation trials will be justified, as it may then be possible to put a superior article on the local market.

Our thanks are due to the Curators of the Albany Museum Herbarium, the Cape Government Herbarium, the Transvaal Museum Herbarium, and the Forest Department for allowing us to examine the material in their respective herbaria.

C. genistoides. The District Forest Officer, Elgin, Caledon District, reports: "This species grows on the slopes of mountains and hills, and is found in fairly large quantities on the Groenland Range, near Elgin. It grows to approximately 3 ft. in height. The leaves and flowers are sun-dried." Known as "honey tea."

C. tenuifolia. The District Forest Officers, Elgin, Caledon District, reports: "This species is not unlike the 'Honey tea' (*C. genistoides*); the flowers are similar in colour and appearance, but the leaves are finer and longer. It is sun-dried before being used, and has a stronger flavour." Known as "vlei tea."

C. brachypoda. The District Forest Officer, Elgin, Caledon District, reports: "The leaves are broader and longer than the other two species (*C. genistoides* and *C. tenuifolia*). It also flowers later. It is found in large quantities throughout the Caledon and Swellendam Districts, and shares popularity with 'honey tea' (*C. genistoides*) as a beverage amongst the poorer classes. It is prepared in a similar manner to 'honey and vlei tea,' known as 'Heidelberg tea.'"

C. subternata. The District Forest Officer at Grootvadersbosch, Swellendam District, reports: "This variety is known as the 'common bush tea,' and thrives abundantly along the slopes of the Langeberg Mountain Range in the Divisions of Swellendam and Riversdale, and large quantities are available each year. The flowering season is generally in the month of August. Large quantities are collected on private ground, the bulk of which is used by poor whites and coloured people, very little being sold owing to the small amount (1½d. per lb.) offered by local buyers after preparation." A form of this species is known as "Hottentot's tea," and according to the District Forest Officer at Grootvadersbosch, "only small quantities of this tea can be found growing, especially in the heart of the Langeberg Mountain Range. Flowering season in August. Very little tea is collected annually."

C. Ashtonii. The District Forest Officer at Grootvadersbosch, Swellendam District, states: "This tea, like *C. subternata*, thrives well along the mountain slopes of the Langeberg, but prefers the damper places. Consequently, the only large patches are found on the mountain side. The flowering season is about November, which is practically the only time that this tea is collected, and then only in small quantities." Locally known as "vlei tea."

C. Burtonii. The Conservator of Forests, Knysna, reports: "It is known in the Zwartberg Mountains as 'heuning or sugar tea.' The shrub grows to a height of 1½–18 in., and is only found in a few places on the Zwartberg Mountains. Apparently it grows at a higher altitude than the ordinary 'bush tea,' and appears able to stand the frost better."

CYCLOPIA, Vent.

Erect branched shrubs. *Leaves* sessile, palmately trifoliate; leaflets narrow-linear, lanceolate or very rarely ovate, glabrous or pubescent, frequently with revolute margins; stipules none. *Peduncles* axillary, one-flowered, with two, rarely three, bracts at the base. *Flowers* bright yellow. *Calyx* subequally 5-cleft, with an intruse base. *Vexillum* roundish, plaited at the base and with a short claw; alae oblong, with a transverse fold; carina incurved, obtusely rostrate, with a small triangular pocket. *Stamens* separate or slightly connate at the base; filaments dilated. *Ovary* glabrous, several ovuled. *Legume* oblong, compressed, with coriaceous valves.

KEY TO SPECIES.

Plants glabrous or nearly so.
- Leaflets flat or with slightly recurved margins.
  - Bracts three ..... 1. *Burtonii.*
  - Bracts two.
    - Leaflets ovate, cordate or truncate at the base ..... 2. *latifolia.*
    - Leaflets elliptic, oblong or sublanceolate-linear, obtuse or acute.
      - Pedicels exceeding the small obtuse or acute bracts; lobes of the calyx equalling the tube or rarely shorter ..... 3. *subternata.*
      - Pedicels the same length as the bracts; the lobes of the calyx exceeding the tube ..... 4. *brachypoda.*
    - Leaflets linear or filiform with strongly revolute margins.
      - Bracts very broad, obtuse ..... 5. *tenuifolia.*
      - Bracts boatshaped, acute ..... 6. *genistoides.*

Plants villous or pubescent at least on the younger parts.
Bracts ribbed, recurved at the apex ..... 7. *pubescens.*
Bracts smooth, straight.
Flowers pedicellate.
Calyx glabrous.
Leaflets linear, strongly revolute ..... 8. *galioides.*
Leaflets narrowly ovate, cordate at the base, slightly revolute.. 9. *Ashtonii.*
Calyx softly hairy ..... 10. *Bolusii.*
Flowers subsessile.
Lobes of the calyx falcate ..... 11. *sessiliflora.*
Lobes of the calyx oblong, not falcate ..... 12. *montana.*

1. **C. Burtonii,** sp. nov.

Rami glabri. *Foliola* subsessilia, 0·6–1·2 cm. longa, 2 mm. lata, lanceolato-elliptica, apice acuta, plana, marginibus leviter reflexis. *Bracteae* 3, 1–2 mm. longae, lanceolatae, apice acutae. *Calyx* 3 mm. longa; lobi ovato-acuminati. *Vexillum* 8·5 mm. longum, 6 mm. latum, apice acutum; ala oblonga; carina rostrata.

Oudtshoorn Division: Zwartberg Mountains, November, *Burton in Herb. Forest Dept.* 2914.

A much-branched glabrous shrub, 30–37 cm. high. *Leaflets* subsessile, 0·6–1·2 cm. long, 2 mm. broad, lanceolate-elliptic, acute at both ends, flat, with slightly reflexed margins. *Bracts* three, 1–2 mm. long, lanceolate, acute, equalling the pedicel; one adnate to the pedicel and smaller than the other two. *Calyx* 3 mm. long; lobes ovate, acuminate, longer than the tube. *Vexillum* 8·5 mm. long, 6 mm. broad, acute; alae narrow-oblong; carina very obtusely rostrate.

2. **C. latifolia** (D.C., Prodr., 2, p. 101).

Plant glabrous. *Stem* strongly ribbed. *Leaflets* sessile, 0·5–2·3 cm. long, 0·3–1·5 cm. broad, ovate, mucronate, cordate or truncate at the base, with entire slightly recurved margins; the middle leaflet the longest. *Bracts* two, 0·5 cm. long, sharp pointed, as long as or almost as long as the pedicel, persistent. *Pedicel* 0·8–1 cm. long. *Calyx* 0·5 cm. long; segments acute, slightly falcate, as long as the tube; the lowest segment longer and minutely toothed at the base.—"*Flora Capensis,*" *II*, 6.

Cape Division: Table Mountain, October, *Bodkin in Herb. Bolus* 8038.

3. **C. subternata** (Vog. Linn. 10, p. 595).

A branched glabrous shrub. *Stems* ribbed. *Leaflets* 1·25–3·75 cm. long, 2–5 mm. broad, elliptic, oblong or lanceolate, acute or obtuse, flat, with reflexed margins. *Bracts* two, 2 mm. long, rarely 4 mm. long, broadly ovate, mucronate, shorter than the pedicels. *Pedicel* 4–11 mm. long. *Calyx* 4–5 mm. long; lobes deltoid, obtuse or subacute, as long as or shorter than the tube.—*C. Vogelli, Harv.*, var. *subternata, Harv.*, "*Flora Capensis,*" *II*, 6.

George Division: Without precise locality, September, *District Forest Officer in Herb. Forest Dept.* 3112. Port Elizabeth Division: Port Elizabeth, *Patterson* 863; Witte Els Bosch, Zitzikama, September, *Galpin* 3899. Riversdale Division: Muis Kraal, near Garcias Pass, October, *Galpin* 3900; *Phillips in Herb. Musei Austro-Afric.* 1991; Toll House, 1700 ft., October, *Bolus* 11249. Swellendam Division: Grootvadersbosch, *District Forest Officer in Herb. Forest Dept.* 2844, 2845. Cape Division: Capetown, October, *Tyson.* Paarl Division: French Hoek, September, *Bolus.* Tulbagh Division: Witsenberg Vlakte, November, *Zeyher.* Knysna Division: Knysna, September, *Keet in Herb. Forest Dept.* 2539; Plettenberg Bay, *Zeyher.* Ceres Division: Koude Bokkeveld, September, *Schlechter* 8922, *Burchell* 5549. Oudtshoorn Division: Zwartbergen, 3000 ft., October, *Schlechter* 5583. Humansdorp Division: Mountains near Humansdorp, *Herb. Bolus* 1056; near French Hoek, *c.* 2400 ft., November, *Bolus* 5151 (in this specimen the base of the calyx is intruse and thus the lobes appear to be longer than the tube.

Specimens collected by Gatherstone at Cango and by Kennedy at Humansdorp compare well with *C. subternata*, except that they have a split fleshy calyx.

4. **C. brachypoda,** comb. nov.

A glabrous shrub. *Stems* ribbed. *Leaflets* 1·25–2·5 cm. long, 2–3 mm. broad, lanceolate or narrow-linear, acute or obtuse, flat, with reflexed slightly wavy margins. *Bracts* two, 4–6 mm. long, ovate-lanceolate, acuminate, very acute, as long as the pedicel. *Calyx* 5–7 mm. long; lobes longer than the tube, falcate, acute.—*C. Vogelii, Harv., var. brachypoda, Harv.*, "*Flora Capensis*," *II*, 6.

Paarl Division: French Hoek, October, *Phillips* 1097. Tulbagh Division: Witsenberg, December, *Ecklon* and *Zeyher* 1147; September, *Zeyher* 354.

Var. **intermedia.** *Bracts* and *pedicels* 1 mm. long. *Leaves* 6–8 mm. long, 2 mm. broad, very obtuse.—*C. Vogelii, Harv.*, var. *intermedia*, "*Flora Capensis*," *II*, 7; *C. intermedia, E. Mey Com.*, p. 3, *excl. lit c.*

Caledon Division: Without precise locality, *District Officer in Herb. Forest Dept.* 2841. Riversdale Division: Langeberg, Riversdale, August, *Muir* 843.

A specimen collected at Elgin in the Caledon Division (*Herb. Forest Dept.* 2891) compares well with *C. brachypoda*, but the material is insufficient to be quite certain of the species.

5. **C. tenuifolia** (Lehm. Linn. 5, p. 373).

Plant glabrous. *Stem* ribbed. *Leaflets* 1·25–5 cm. long, linear-filiform, with revolute margins. *Bracts* two, 3 mm. long, 5 mm. broad, folded longitudinally and overlapping each other, obtuse or truncate, strongly keeled, glabrous without, sparsely hairy within. *Pedicel* 1·25–1·75 cm. long, elongating in fruit. *Calyx* 5 mm. long; lobes as long as the tube, acute, with slightly woolly margins; the lowest lobe longer and broader than the others, minutely toothed at the base. *Legume* oblong, with a recurved mucro at the apex; valves leathery.—"*Flora Capensis*," *II*, 7.

Caledon Division: Elgin, October, September, *District Forest Officer in Herb. Forest Dept.* 2840, 3114. Swellendam Division: River Zonder Einde, *Zeyher* 2257. Riversdale Division: Corento River Farm, Riversdale, November, *Muir* 50, and *in Herb. Galpin* 5072.

6. **C. genistoides** (Br. Hort. Kew., ed. 2, vol. 3, p. 5).

Stem ribbed, glabrous or nearly so. *Leaflets* 1·25–3·75 cm. long, narrow-linear, with strongly revolute margins. *Flowers* in a dense mass near the ends of the branches. *Bracts* 5 mm. long, acute and mucronate at the apex, boat-shaped, folded longitudinally, glabrous without, with a few scattered hairs on the inner surface. *Pedicel* 6–8 mm. long. *Calyx* 8–11 mm. long; lobes longer than the tube, broadly falcate, with a mucronate apex, margins woolly; lowest segments longer than the others and toothed at the base.—"*Flora Capensis*," *II*, 7.

Caledon Division: Caledon, August, *Rogers* 11017; October, *Bolus*; *District Forest Officer in Herb. Forest Dept.* 2842. Cape Division: Tokai Plantation, September, *Herb Forest Dept.* 1052; Cecelia Plantation, *Ross in Herb. Forest Dept.* 3113; near Capetown, October, *Bolus* 7272; Devil's Peak, November, *MacOwan* 1113, and *in Herb. Musei Austro-Afric.* 6546; Constantia, September, *Schlechter* 1461. Stellenbosch Division: Stellenbosch, October, *Mrs. De Jongh in Herb. Galpin* 4390. Swellendam Division: Swellendam, *Ecklon* and *Zeyher*. Clanwilliam Division: Clanwilliam, *Mader in Herb. Austro-Afric.*

7. **C. pubescens** (E. and Z. Enum. No. 1146).

Stem pubescent. *Leaflets* 1·25–3·75 cm. long, about 1 mm. broad, narrow-linear, with revolute margins, pubescent, at length becoming almost glabrous. *Flowers* densely massed. *Bracts* 4–6 mm. long, almost as broad, ribbed, acuminate, recurved at the apex, pubescent, shorter than the pedicel. *Pedicel* 1·25–1·75 cm. long, villous. *Calyx* 8 mm. long, pubescent; lobes taper-pointed from a broad base, twice as long as the tube.—"*Flora Capensis*," *II*, 8.

Port Elizabeth Division : Port Elizabeth, September, *Drège in Herb. Albany Museum* 167.

8. **C. galioides** (D.C., Prodr. 2, p. 101).

Young branches ribbed, densely villous, at length becoming almost glabrous. *Leaflets* arising from a thick flattened node, 1·25–2·5 cm. long, up to 4 mm. broad, linear, with strongly revolute margins, with a recurved mucro at the apex, truncate at the base, pubescent when young. *Bracts* 4–6 mm. long, ovate-lanceolate, acuminate, longer than the pedicel. *Pedicel* 2–4 mm. long. *Calyx* 6–13 mm. long, glabrous ; lobes broadly falcate, acuminate, longer than the tube.—" *Flora Capensis*," *II*, 8.

Cape Division : Fish Hoek, May, *Bolus in Herb. Norm. Austro-Afric.* 67 ; Muizenberg, *Zeyher* ; Simonstown, February, *Compton*.

9. **C. Ashtonii,** sp. nov.

Rami sericei. *Foliola* 1·75 cm. longa, 4 mm. lata, basi cordata, marginibus revolutis. *Bracteae* 4 mm. longae, ovatae, ciliatae, intus villosae. *Calyx* 8 mm. longus ; lobi falcati.

Swellendam Division : Langeberg Mountains, *Ashton in Herb. Forest Dept.* 2843.

Young branches silky. *Leaflets* from a thick flattened node, up to 1·75 cm. long, 4 mm. broad, thick, cordate at the base, with revolute margins, paler beneath. *Bracts* 4 mm. long and slightly broader, ovate, ciliate, villous on the inner surface. *Calyx* 8 mm. long ; lobes broadly falcate.

10. **C. Bolusii,** sp. nov.

Rami villosi. *Foliola* 1·2 cm. longa, apice mucronata, marginibus revolutis, villosa. *Bractae* 6 mm. longae, ovatae, acuminatae, villosae. *Pedicellus* 7 mm. longus. *Calyx* 4 mm. longus ; lobi falcati, villosi.

Oudtshoorn Division : In stony places at summit of the Zwartberg Pass, December, *Bolus* 11465.

A small-branched villous shrub. *Leaflets* 1·2 cm. long, mucronate at the apex, with strongly revolute margins, villous. *Bracts* 6 mm. long, broadly ovate, acuminate, villous. *Pedicels* 7 mm. long. *Calyx* 4 mm. long ; lobes broadly falcate.

11. **C. sessilifiora** (E. Mey. Com., p. 4).

Young branches and leaves densely villous, at length becoming glabrous. *Leaflets* 1·25 cm. long, linear, with strongly revolute margins, subsessile. *Bracts* 6 mm. long, broadly ovate, acuminate. *Flowers* ciliate. *Calyx* softly villous ; lobes falcate.—" *Flora Capensis*," *II*, 8.

Caledon Division : Genadendal, December, *Schlechter* 9826.

12. **C. montana,** sp. nov.

Rami juniores sericei. *Foliola* 1·25–2·5 cm. longa, 2 mm. lata, linearia, basi cordata, marginibus revolutis. *Bractae* 4–6 mm. longae, ovatae, glabrae. *Calyx* sericeous, 8 mm. longus ; lobus infernus ceteris major.

Tulbagh Division : Sneeuwgat Valley, Great Winterhoek, November, *Phillips* 1693.

Var. **glabra.** Calycis glabris differt.

Ceres Division : Matroosberg, December, *Phillips* 1943.

Young branches and leaves silky, at length becoming glabrous. *Leaflets* 1·25–2·5 cm. long, 2 mm. broad, linear, cordate at the base, with revolute margins. Flowers subsessile. *Bracts* 4–6 mm. long, broadly ovate, glabrous, longer than the pedicel. *Calyx* 8 mm. long, densely silky ; the lower segment largest and broadest ; the middle segments shortest, subacute, broadly oblong ciliate.

Var. *glabra* differs in having a glabrous calyx.